RSIC Newsletter

OAK RIDGE NATIONAL LABORATORY
POST OFFICE BOX X • OAK RIDGE, TENNESSEE
OPERATED BY UNION CARBIDE CORPORATION
FOR THE U.S. DEPARTMENT OF ENERGY

Phone No. 615-574-6176 or FTS 624-6176
Telex No. 8105721076 USDOE OKRE

No. 228 *November 1983*

It is necessary to try to surpass one's self always; this occupation ought to last as long as life. — Queen Christina of Sweden

REFLECTIONS AND PROJECTIONS

As the new director of RSIC, I approach the position with a real sense of pride because of the role RSIC has played and is playing in the international shielding community. I am gratified to be involved in a technical area which has a high degree of cooperation and which has avoided proprietary tendencies. This atmosphere of cooperation has been promoted by RSIC's sponsors and has been an overriding goal of those who have lead RSIC in the past: **Keith Penny, Dave Trubey,** and **Betty Maskewitz**. RSIC will continue these efforts.

As we begin a new phase of RSIC's operation, it might be useful to reflect on how things have changed over the last 15 years and perhaps to make some projections about where things are going in the future.

RSIC began as an information analysis center for radiation shielding. The scope of coverage evolved over the years to encompass the general field of radiation transport. Emphasis has changed to reflect the focus of national programs. Substantial National Aeronautics and Space Administration (NASA) and Department of Energy (DOE) research programs for shielding of manned spacecraft and for space nuclear power and nuclear rocket propulsion grew in the 1960s, diminished in the 1970s, and will evidently grow again in the 1980s.

The basic DOE research program to support breeder reactor development has been a steady source of significant technology commonly used in the radiation transport field. The Defense Nuclear Agency has supported radiation transport development at a modest level after an intensive program peaked in the mid 1970s. The DOE fusion program is taking an increasing role in radiation transport enhancement, building on the technology base developed in earlier years in other disciplines. The nuclear power industry is assuming substantial responsibility for radiation transport analysis of existing power plants, enhancing their capacity to handle the increased workload of new plants coming on line. The industry draws on the RSIC technology base to build its in-house capability.

RSIC has long served an international community, promoting the exchange of technology. It is evident that these efforts have paid dividends, particularly in recent years. As reported in the October 1983 *RSIC Newsletter*, 45% of the new code and data packages in FY 83 were non-U.S. contributions.

The spectrum of methods used in the community appears to have changed considerably. Kernel integration techniques are still in use, particularly in the nuclear power industry, but one-dimensional discrete ordinates calculations, a relatively new technology 15 years ago, is now in common use. Most analysts now also use two-dimensional discrete ordinates as well as Monte Carlo techniques for complex problems. There

have been advances in the development of techniques for radiation spectrum unfolding both for neutrons and gamma-rays. Methodology for radiological assessment of releases into the atmosphere and hydrosphere has enhanced the capability of today's radiation transport analyst. Sensitivity and uncertainty analysis techniques have been introduced to help the radiation transport community solve complex problems and pinpoint areas where improvements are needed in methods and data.

The Evaluated Nuclear Data File (ENDF) focuses on providing an adequate evaluated neutron and gamma-ray cross-section library for radiation transport applications. The steady growth of the quality and coverage of ENDF/B, with the development of cross section processing systems, has resulted in a substantial data base to support the radiation transport community.

Much of the increased capability is due to the improvement of computing power. In addition to mainframe computers at every installation, many users now have access to national super computer centers, such as the National Magnetic Fusion Energy Computing Center (NMFECC) at Livermore. At the same time, every installation is taking advantage of the increased availability of powerful, and inexpensive, mini and microcomputers. Recent issues of the *RSIC Newsletter* reveal RSIC's involvement with computing technology for microcomputers, and RSIC staff members are placing computing technology on NMFECC. It is evident that analysts will be able to take advantage of these trends, employing both super computers and microcomputers to solve tomorrow's radiation transport problems.

As we look to the future, we can be sure of one thing — uncertainty. Personally, I approach it with optimism. RSIC is staffed with very capable individuals who can carry on traditional activities and who can adapt as new challenges are encountered. Our goal is to continue to serve as **your** information analysis center, realizing that the continued support and cooperation of the radiation transport community is vital to our success.

R. (Bob) W. Roussin

CHANGES TO THE COMPUTER CODES COLLECTION

During the month there were nine changes to the computer codes collections. Three new code systems were packaged, three existing code systems were replaced with newly frozen versions, two code packages were updated and/or corrected, and one code package was extended with a new hardware version. Four of the changes came from foreign contributors — France, Japan, South Africa, and the United Kingdom.

CCC-202/PELSHIE

This general purpose kernel integration shielding code system for point and extended gamma-ray sources was extended to include a CDC version. The new version, designated (B), was contributed by the Electricity Supply Commission, Johannesburg, South Africa.

CCC-203/MORSE-CG

The (A) and (B) versions (UNIVAC 1108 and CDC 6600) of this general purpose Monte Carlo multigroup neutron and gamma-ray transport code system were updated with major changes. One Subroutine, ENRGYS, was replaced in the CDC version. We suggest that persons using either of these versions furnish a reel of magnetic tape and request the new version. The IBM (C) version was not affected by this update.

CCC-311/MARC-PN

This neutron diffusion code system with spherical harmonics option was replaced with a newly frozen version and new documentation contributed by the United Kingdom Atomic Energy Agency, Risley Nuclear Power Defense Establishment, Warrington, England. In the new version, the cross-section processor previously referred to as FLENCO is now available as DATSHI. DATSHI enables the code to work directly from the 37-group FD5 fast reactor cross-section resonance self-shielding calculations for nuclides requiring it. DATSHI condenses the FD5 data to fewer groups with user-supplied spectral data and prepares macroscopic cross-sections for use by the flux cal-

culation. References: TRG Report 2991(R), TRG Report 2547(R), TRG Report 2344(R), ND-R-560(R), TRG Report 2849(R), and informal papers. FORTRAN IV; ICL 2982 and IBM 3081.

CCC-372/TRIPOLI 2.1

This three-dimensional Monte Carlo radiation transport code system was replaced with a newly frozen version contributed by CEA/CEN/Saclay, SERMA Shielding Laboratory, Gif-sur-Yvette, France. The newly frozen version has been designated 2.1. It differs from its predecessor, TRIPOLI 2.0, in that it includes the new driver system, ATLAS, and its management utility, SPHINX, allowing simple management of source, binary, and load modules. The MACROS modules working with MICROS libraries are processed from ENDF/B-IV data. Two MICROS libraries for 31 materials from ENDF/B-IV are included: MICROSP for shielding studies with STEP MODE (multigroup) on the whole energy range and MICROSN for core neutronic studies with POINT MODE between 5.53 keV to 5 eV. Minor corrections have also been made in the code package. Reference: SERMA Report 402 (Nov. 1981). FORTRAN IV; IBM 3033.

CCC-394/MORSE-ALB

MORSE-ALB, an albedo version of CCC-203/MORSE-CG, was contributed by the NAIG Nuclear Energy Laboratory, Toshiba Corporation, and Power Reactor and Nuclear Fuel Development Corporation through the Japan Atomic Energy Research Institute (JAERI), Tokyo, Japan. Developed to estimate neutron streaming through a duct by means of various importance sampling techniques, MORSE-ALB utilizes a new technique which couples the discrete ordinates method (Sn) with the albedo Monte Carlo method to establish more effective and more accurate methods for evaluating both neutron streaming and transmission. Reference: JAPFNR-545 (ORNL/tr-4729). FORTRAN IV and Assembler Language; TOSBAC 560 and FACOM M200.

PSR-45/GAUSS VII

The CDC (B) version of this code system for analysis of gamma-ray spectra from Ge(Li) spectrometers was updated to correct errors as suggested by the code contributors, EG & G, Inc., Idaho Falls, Idaho. Details of the update may be requested from RSIC.

PSR-102/FERDO-FERD

This code system was replaced with a newly frozen version contributed by the Oak Ridge National Laboratory. The present code system represents the collaborative effort of individuals long associated with FERDO-FERD, two of whom are now on the staff of the National Bureau of Standards (B. Rust) and Science Applications Incorporated (R. Burrus). Written to correct observed pulse-height distributions for the nonideal response of a pulse-height spectrometer or to solve poorly conditioned linear equations, the system assumes that the response of the spectrometer is given by $Ax = b$, where A is the spectrometer response function matrix, x is the unknown spectrum, and b is the pulse-height distribution. FERDO does not solve directly for x, but instead solves for $p = Wx$, where W is a "window function matrix." Reference: ORNL/TM-8720. FORTRAN IV; IBM 3033.

PSR-197/METD

This group of computer codes for use with meteorological data was contributed by the Nuclear Regulatory Commission. It processes the hour-by-hour meteorological data which the NRC receives on magnetic tape in a format specified in Regulatory Guide 1.70, Revision 2. METD is used to examine, assess, and utilize these hourly values of meteorological data. Reference: NUREG-0917. FORTRAN IV; IBM 3033.

PSR-199/HEATING6

Because HEATING6 is often requested as a stand-alone code and is not connected to the neutronics calculations of the CCC-450/SCALE-2 modules, it has also been packaged as a stand-alone system. It is a modification of the generalized heat conduction code SCA-1/HEATING5, and is designed to solve steady-state and/or transient heat conduction problems in one-, two-, or three-dimensional Cartesian or cylindrical coordinates or one-dimensional spherical coordinates. The thermal conductivity, density, and specific heat may be both spatially and temperature dependent. The thermal conductivity may be anisotropic. Materials may undergo a change of phase. The mesh spacing may be variable along each axis. Free form input is used. Reference: NUREG/CR-200, ORNL/NUREG/CSD-2, Vol. 2, Section F10, and Vol. 3, Section M2. FORTRAN IV; IBM 3033.

*****

LITERARY NOTES

RSIC Bibliography Issued

An indexed bibliography of open literature in the area of radiation transport and shielding selected by RSIC since the previous volume was published in 1980 has been published. In addition to lists of literature titles by subject categories (accessions 6201–10156), an author index is given.

Most of the literature selected for Vol. VII was published in the years 1977–81. A limited number of paper copies of the document, *Bibliography, Subject Index and Author Index of the Literature Examined by the Radiation Shielding Information Center*, ORNL/RSIC-5/V7 (1983) by D. K. Trubey, R. W. Roussin, and A. B. Gustin, are available from RSIC upon request. When paper copies are exhausted, the document will be available on microfiche as are prior volumes.

1st in *Guidance on Standards* Series Published

Radiological Protection Objectives for the Disposal of Solid Radioactive Wastes, is the first in a series, *Guidance on Standards*, to be published by the National Radiological Protection Board of the United Kingdom. The series will contain guidance for application in the U.K. of standards concerned with radiological protection.

The first report states the objectives for the disposal of solid radioactive wastes. Though current interest is in the establishment of new land disposal facilities for low- and intermediate-level wastes, the objectives stated in the report are intended for all types of solid radioactive waste and disposal methods in use or being considered in the U.K.

6TH ICRS Proceedings Published

The proceedings of the Sixth International Conference on Radiation Shielding has been published. Copies may be requested from T. Asaoka, Numerical Analysis Laboratory, Japan Atomic Energy Research Institute, Tokai-mura, Ibaraki-ken 319-11, Japan. The cost is $40. We suggest requesting shipment by air.

PERSONAL ITEMS

In serving a specialized area of scientific endeavor, it seems important that we take note of the movement of people concerned with radiation protection, transport, and shielding in the nuclear industry. We, therefore, continue to carry personal items as they are brought to our attention.

During the past month we have been informed of the following changes of address: *Jussi Vanne*, from the Technical Research Centre, Helsinki, Finland, to OECD NEA Data Bank, Gif-sur-Yvette, France; *Mohamed Abdou*, from Argonne National Laboratory, to the Univ. of California, Los Angeles; *Li Linpei*, from the National Bureau of Standards, Washington, to the National Institute of Metrology, People's Republic of China; *C. M. Lampley*, from Radiation Research Assoc., Inc., to Cawley, Gillespie, & Assoc., Fort Worth, Texas; *Hermann Krause*, from Max Planck Inst. für Plasma Physik, FRG, to Joint European Torus Joint Undertaking, Oxfordshire, England; *Howard Spitzer*, from McDonnell-Douglas Corp., Huntington Beach, to Kaman Tempo, Fountain Valley, California; and *S. L. Bhatia*, from EG & G Idaho, to Newport News Reactor Svc., Inc., Idaho Falls, Idaho.

Arnošt Hönig, Director of the Radiation Defectoscopy Center, Brno Technical University, Brno, Czechoslovakia, is now the Vice-Chancellor of the University. He has also been elected Honorary President of the International Union of Testing and Research Laboratories for Materials and Structures (RILEM). In this role he organized the recently-held 37th meeting of the RILEM General Council.

Our congratulations go to **D. T. Ingersoll**, Oak Ridge National Laboratory, who won the Radiation Shielding and Protection Division best paper award at the ANS meeting in Detroit. His paper was entitled, "Survey of Shielding Data and Methods for Fuel Processing."

Visitors to RSIC

During the month of October the following persons came to visit/use RSIC facilities: *Masahito Igarashi*, and *Michihisa Ikeda*, Century Research Corp., Tokyo, Japan; *Peretz Levin*, Nuclear Research Center-Negev, Beersheva, Israel; *Luis Garcia DeViedma*, OECD NEA Data Bank, Gif-sur-Yvette, France; *Fred D. Ferate, II*, Puget Sound Naval Shipyard, Bremerton, Washington; *Allen Mincer*, Univ. of Maryland, College Park, Maryland; *Alan W. Dooley*, Air Force Inst. Technol., Dayton, Ohio; *Herbert Rief*, European Shielding Information Service (ESIS), EURATOM Establishment, Ispra, Italy; *Philip B. Hemmig*, U.S.-DOE; and *Jack Courtney*, Louisiana State Univ., Baton Rouge.

UPCOMING MEETINGS, CONFERENCES, AND COURSES

Your attention is called to the following events of interest to the radiation shielding community.

REAC/TS Courses in Handling Radiation Accidents

The Radiation Emergency Assistance Center/Training Site (REAC/TS) in Oak Ridge, Tennessee, will

be conducting several courses in the handling of radiation accidents. Included is a course on health physics, described below. Further information may be obtained from Judy Lambert, Registrar, REAC/TS, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831.

Health Physics in Radiation Accidents will be held January 9–13, and September 17–21, 1984. This one-week course is designed for health physicists who may be called upon to respond to accidents involving radioactive materials and personnel injury, with topics covering radiation physics review, principles of radiation detection and internal dosimetry, protective clothing and equipment, radiological emergency procedures, and the role of the health physicist in a medical environment.

RP&S Liaison for ANS-HPS Joint Session

The Radiation Protection and Shielding Division of the ANS will serve as liaison for the Joint Session of the ANS and the Health Physics Society when they meet in New Orleans in June 1984. Joint sessions are tentatively planned on the following topics: Environmental Sciences, Fuel Cycle Waste and Management, Isotopes, Radiation, and Remote System Technology.

ICFRM-1

The First International Conference on Fusion Reactor Materials will be held November 19–22, 1984, in Tokyo, Japan. It will be the first in a new series of international conferences devoted to the scientific and technical progress of fusion reactor materials. As the counterpart of U.S. Topical Meetings on Fusion Reactor Materials, it will be hosted by countries other the USA. The conference is co-sponsored by the Atomic Energy Society of Japan, the Iron and Steel Institute of Japan, the Japan Institute of Metals, the Japan Society of Applied Physics, the Amercian Nuclear Society, the Nuclear Metallurgy Committee of the AIME and ASM, and several European societies.

Emphasis will be on experimental and theoretical studies of radiation effects on materials in fusion reactor environments and simulation irradiation studies with fission reactors, accelerators and other radiation sources.

The scope of the conference will also include the following topics: Materials and Reactor Design; Materials Data Base and Materials/Design Interface; Breeding Materials; Special Purpose Materials; High Heat Flux Materials; Superconducting Magnet Materials; Low Activation Materials; Compatibility; Fabrication Technology; Modelling and Computer Simulation; and Experimental Facilities, Techniques, and Analyses.

A number of invited papers will be presented at the conference. Those engineers, designers, and researchers engaged in materials problems in fusion reactors are invited to contribute papers on the topics listed above.

A circular to be issued by the end of December 1983 will announce the details for the submission of papers. The proceedings, which will include both contributed and invited papers accepted by the Editorial Committee, will be published in the Conference volume of the *Journal of Nuclear Materials*.

Correspondence concerning the conference should be addressed to R. R. Hasiguti, General Chairman, The Science Univ. of Tokyo, Faculty of Engineering, Kagurazaka, Shinjuku-ku, Tokyo 162, Japan.

Calendar

Your attention is called to the following additional events of interest to the radiation shielding and protection community.

16th Japan Conference on Radiation and Radioisotopes, December 6–8, 1983, Tokyo, Japan, sponsored by the Japan Atomic Industrial Forum. Contact: Section for Industrial Programs and Technology, Japan Atomic Industrial Forum, Inc., Toshin Bldg., 1-13 Shimbashi, 1-chome, Minato-ku, Tokyo 105, Japan.

5th Annual Civilian Radioactive Waste Management Information Meeting, December 12–15, 1983, Washington, D. C., sponsored by the U.S.-DOE. Contact: Civilian Radioactive Waste Management Information Meeting, Suite 302, 2301 Research Blvd., Rockville, Maryland 20850.

January 1984

Symposium on Space Nuclear Power Systems, January 10–13, 1984, Albuquerque, New Mexico, sponsored by the University of New Mexico. Contact: Carlota Klimas, New Mexico Engr. Research Inst., Campus P.O. Box 25, Univ. of New Mexico, Albuquerque, NM 87131, USA.

Workshop on Nuclear Model Computer Codes, January 16–February 3, 1984, Trieste, Italy, sponsored by IAEA. Contact: International Centre for Theoretical Physics, Workshop of Nuclear Model Computer Codes, P.O. Box 586, I-34100 Trieste, Italy (phone 224281-6).

General Meeting of the American Physical Society, January 30–February 2, 1984, San Antonio, Texas. Contact: The American Physical Society, 335 East 45th St., New York, NY 10017, USA.

February 1984

17th Midyear Topical Meeting of the Health Physics Society, February 5–9, 1984, Pasco, Washington. Contact: Edwin C. Watson, Columbia Chapter, Health Physics Society, P.O. Box 564, Richland, Washington 99352 (phone 509-375-6919).

11th Annual Conference of the Indian Association for Radiation Protection, February 13–16, 1984, Jodhpur, Rajasthan, India. Contact: J. V. Ramana Rao, (Secretary, Organising Committee, XI IARP Conf.), Deputy Director, Ratanada Palace, Jodhpur, Rajasthan 324 001, India.

March 1984

General Meeting of the American Physical Society, March 26–30, 1984, Detroit, Michigan. Contact: The American Physical Society, 335 East 45th St., New York, NY 10017, USA.

April 1984

5th International Conference on Nuclear Methods in Environmental and Energy Research, April 2–6, 1984, Mayaguez, Puerto Rico, USA, sponsored by the ANS; American Chemical Society; U.S.-DOE; Univ. of Puerto Rico-Recinto; Univ. of Mayaguez; and the Univ. of Missouri. Contact: James R. Vogt, Univ. of Missouri, 214 Research Reactor, Columbia, Missouri 65211, USA (phone 314-882-4211).

20th Annual Meeting of the National Council on Radiation Protection and Measurements, April 4–5, 1984, Washington, sponsored by the National Council on Radiation Protection and Measurements. Contact: NCRP, 7910 Woodmont Ave., Suite 1016, Bethesda, Maryland 20814.

Annual Meeting of the Radiation Research Society, April 8–12, 1984, Orlando, Florida. Contact: American College of Radiology, 925 Chestnut St., Philadelphia, Pennsylvania 19107, USA.

5th Annual Conference of the Canadian Radiation Protection Association, April 30–May 3, 1984, Banff, Alberta, Canada. Contact: Stuart E. H. Hunt, Local Arrangements Chairman, C-7 Civil Electrical Engr. Bldg., Univ. of Alberta, Edmonton, Alberta, Canada T6G 2G7 (phone 403-432-5655).

May 1984

6th Congress of the International Radiation Protection Association, and *Exhibition,* May 7–12, 1984, Berlin, West Germany. Contact: R. Neider, Bundesanstalt für Materialprüfung (BAM), Unter den Eichen 87, D-1000 Berlin 45.

Nuclear Technology Exhibit, May 11–19, 1984, Bejing, China, sponsored by the ANS. Contact: P. Pollock, Exhibit Manager, ANS, 555 N. Kensington Ave., La Grange Park, Illinois 60525 USA (phone 312-352-6611).

6th Annual Symposium on Safeguards and Nuclear Material Management, May 14–18, 1984, Venice, Italy, sponsored the by European Safeguards Research and Development Association (ESARDA) and the Commission of the European Communities. Last date for abstracts and summaries is November 30, 1983. Contact: L. Stanchi, Commission of the European Communities Joint Research Centre, I-21020 Ispra (Varese), Italy.

June 1984

24th Annual International Conference of the Canadian Nuclear Association, June 3–6, 1984, Saskatoon, Saskatchewan, Canada. Contact: J. A. Weller, General Manager, Canadian Nuclear Association, 111 Elizabeth Street, 11th Floor, Toronto, Ontario, Canada M5G 1P7.

29th Annual Meeting of the Health Physics Society, June 3–7, 1984, New Orleans, Louisiana. Contact: Richard J. Burk, Jr., Executive Secretary, Health Physics Society, 4720 Montgomery Lane, Suite 506, Bethesda, Maryland 20014, USA.

ANS Annual Meeting, June 3–8, 1984, New Orleans, Lousiana. Contact: Thomas H. Row, ORNL, Bldg. 4500, MS-S-178, Oak Ridge, TN 37831-2008 USA.

July 1984

Topical Meeting on Fission Product Behaviour and Source Term Research, July 15–19, 1984, Snowbird, Utah, sponsored by ANS; Electric Power Research Institute (EPRI); Canadian Nuclear Society; and the Atomic Energy Society of Japan. Contact: W. J. Quapp, EG & G Idaho, Inc., P.O. Box 1625, Idaho Falls, Idaho 83415, USA (phone 208-526-9606).

September 1984

5th International Symposium on Capture Gamma Ray Spectroscopy and Related Topics, September 10–14, 1984, Oak Ridge, Tennessee. Contact: S. Raman, Physics Division, Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, Tennessee 37831-2008 USA.

ANS Topical Meeting on Physics and Shielding, September 17–19, 1984, Chicago, Illinois. Contact: Leo LeSage, Argonne National Laboratory, Applied Physics Div., 9700 South Cass Ave., Argonne, Illinois 60439 USA (phone 312-972-6045).

5th ASTM-EURATOM Symposium on Reactor Dosimetry, September 24–28, 1984, Geesthacht, Fed. Rep. of Germany, sponsored by Commission of the European Communities, ASTM, U.S.-DOE, and U.S.-NRC. Contact: E. B. Norris, Southwest Research Institute, P.O. Drawer 28510, San Antonio, Texas 78284 (for Japanese and US authors); H. Rottger, Joint Research Centre, Petten Establishment, HFR Div., Postbus 2, 1755 ZG Petten (N. H.), Netherlands (all other authors). Last date for abstracts is December 1, 1983.

October 1984

International Conference on Occupational Radiation Safety in Mining, October 15–18, 1984, Toronto, Ontario, Canada, sponsored by the Canadian Nuclear Assoc., Canadian Dept. of Energy, Mines, and Resources, and the Atomic Energy Control Board. Last date for abstracts is January 1, 1984. Contact: Internatl. Conf. on Occupational Radiation Safety in Mining, Canadian Nuclear Assoc., 111 Elizabeth St., 11th Floor,

Toronto, Ontario, Canada M5G 1P7 (general information) and R. D. Gillespie, c/o MacLaren Engr., Inc., 33 Yonge St., Toronto, Ontario, Canada M5E 1E7 (for abstracts).

Symposium on Radiation Dosimetry, October 15–19, 1984, Knoxville, Tennessee, sponsored by Oak Ridge National Laboratory. Contact: C. S. Sims, ORNL, P.O. Box X, Bldg. 7710, Oak Ridge, TN 37831-2008 USA.

Meeting of the Nuclear Physics Div. of the American Physical Society, October 18–20, 1984, Nashville, Tenn. Contact: American Physical Society, 335 E. 45th St., New York, NY 10017 USA.

International Symposium on the Implementation of the IAEA Codes of Practice and Safety Guides for Nuclear Power Plants, October 29–November 2, 1984. Contact: Conf. Svc. Sect., IAEA, P.O. Box 100, A-1400 Vienna, Austria.

November 1984

Inter-Regional Seminar on Practical Problems Encountered in the Safe Transport of Radioactive Materials, November 5–8, 1984, Vienna. Contact: Conf. Svc. Sect., IAEA, P.O. Box 100, A-1400 Vienna, Austria.

Joint Meeting of the American Nuclear Society, the Atomic Industrial Forum, and the European Nuclear Society, November 11–16, 1984, Washington. Contact: George W. Cunningham, Nuclear Studies, Mitre Corp., 1820 Dolley Madison Blvd., McLean, Virginia 22102 USA.

International Symposium on Assessment of Radioactive Contamination in Man, November 19–23, 1984, Paris, sponsored by the International Atomic Energy Agency. Contact: Conf. Svc. Sect., IAEA, P.O. Box 100, A-1400 Vienna, Austria.

Conference on Radioactive Waste Management, November 27–29, 1984, London, sponsored by the British Nuclear Energy Society. Contact: The Secretariat, British Nuclear Energy Society, at the Institution of Civil Engineers, 1-7 Great George St., London SWIP 3AA, UK.

OCTOBER 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 22161.

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.

This Literature is on order. It is not in our system. Please order from NTIS or other available source as indicated.

Radiation Shielding Literature

ANL-83-25 Physics Division Annual Review, 1 April 1982 - 31 March 1983., . . Gemmell, D.S., . . June 1983, . . NTIS

ANL/NDM-79 Few-MeV Neutrons Incident on Yttrium., . . Budtz-Jorgensen, C.; Guenther, P.; Smith, A.; Whalen, J., . . September 1982, . . NTIS

BNL-33419; CONF-8304115-1 Dose Reduction and Optimization Studies (ALARA) at Nuclear Power Facilities., . . Baum, J.W.; Meinhold, C.B., . . 1983, . . NTIS, PC A02/MF A01

CEA-CONF-6316; CONF-820163-1 Low Energy Nuclear Fission., . . Nifenecker, H., . . February 1982, . . NTIS (U.S. Sales Only), PC A02/MF A01

CEA-CONF-6520; CONF-820163-2 Introduction into the Content of the Major Available Evaluated Nuclear Data Libraries., . . Salvatores, M., . . February 1982, . . NTIS (U.S. Sales Only), PC A03/MF A01

CEA-CONF-6522; CONF-820786-1 Preliminary Analysis of the NEACRP LMFBR Shielding Benchmark., . . Palmiotti, G.; Salvatores, M.; Trapp, J.P., . . July 1982, . . NTIS (U.S. Sales Only), PC A03/MF A01

CONF-830528-17 Standard Problem Exercise to Validate Criticality Codes for Spent LWR Fuel Transport Container Calculations., . . Whitesides, G.E.; Stephens, M.E., . . 1983, . . NTIS, PC A02/MF A01

CONF-830871-6 Comparison of Damage Microstructures in Neutron-Irradiated Vanadium and Iron., . . Horton, L.L.; Farrell, K., . . 1983, . . NTIS, PC A02/MF A01

CONF-831047-25 Impacts of Data Covariances on the Calculated Breeding Ratio for CRBRP., . . Liaw, J. R.; Collins, P.J.; Henryson, H.,II; Schenter, R.E., . . 1983, . . NTIS, PC A02/MF A01

CONF-831047-26 Analysis of Three Idealized Reactor Configurations: Plate, Pin, and Homogeneous., . . McKnight, R.D., . . 1983, . . NTIS, PC A02/MF A01

CONF-831047-55 Neutron Measurements and Radiation Damage Calculations for Fusion Materials Studies., . . Greenwood, L.R., . . 1983, . . NTIS, PC A02/MF A01

CONF-831047-59 Magnitude of Bias in Monte Carlo Eigenvalue Calculations., . . Bowsher, H.; Gelbard, E.M.; Gemmel, P.; Pack, G., . . 1983, . . NTIS, PC A02/MF A01

CONF-831047-73-Summ. Field Maintenance of Radiation-Shielding Windows at HFEF., . . Tobias, D. A., . . 1983, . . NTIS, PC A02/MF A01

DOE/EV/01105-300 Kerma Factor of Carbon for 14.1-MeV Neutrons., . . DeLuca, P.M.,Jr.; Barschall, H. H.; Haight, R.C.; McDonald, J.C., . . 1982, . . NTIS, PC A02/MF A01

EGG-PHYS-6356 ENDF/B Version 4 and 5 Cross Sections Libraries for the RAFFLE V Monte Carlo Code., . . Grimesey, R.A., . . July 1983, . . NTIS, MF A01

EPRI-NP-2819 Design and Testing of a Laboratory Gamma-Ray Densitometer for Two-Phase Flow. (Final Report), . . Herschthal, M.; Kawaji, M.; Banerjee, S., . . April 1983, . . NTIS, PC A04/MF A01

EUR-7798 SHAMSI, 48 Group Cross-Section Library for Fusion Nucleonics Analysis., . . Ponti, C.; Abbas, T., . . 1982, . . NTIS (U.S. Sales Only), PC A02/MF A01

FERMILAB/TM-1204 Concrete Shielding Exterior to Iron., . . Yurista, P.; Cossairt, D., . . August 1983, . . NTIS, PC A02/MF A01

HEDL-SA-2775-S; CONF-830406-58 Fusion Materials Irradiation Test (FMIT) Facility Lithium System: A Design and Development Status., . . Brackenbury, P.J.; Bazinet, G.D.; Miller, W.C., . . 1983, . . NTIS, PC A02/MF A01

IAEA-NDS-28 RESPAR3 and RESPAR3ED Libraries. Resonance Parameters from BNL-325 (3rd Ed. 1973). Content and Format Description., . . Silva, C.S.A. da; Paviotti Corcuera, R., . . February 1979, . . NTIS (U. S. Sales Only), PC A02/MF A01

INDC(CSR)-4/LI Neutron Activation Cross Sections on Ti Isotopes at 14.8 MeV., . . Ribansky, I.; Gmuca, S., . . April 1983, . . IAEA Nuclear Data Section, Wagramerstrasse 5, A-1400 Vienna

INDC(GDR)-20 Description of the Evaluated Neutron Nuclear Data File 2015 for Silicon of the SOKRATOR Library., . . Hermsdorf, D., . . July 1982, . . IAEA Nuclear Data Section, Wagramerstrasse 5, A-1400 Vienna

INDC(GDR)-22 Consistent Interpretation of Neutron-Induced Charged-Particle Emission in Silicon., . . Hermsdorf, D., . . June 1982, . . IAEA Nuclear Data Section, Wagramerstrasse 5, A-1400 Vienna

INFN-LNF-78/39(R) Radiation Doses at an Electron and Positron Linac and Storage Ring., . . Esposito, A.; Pelliccioni, M.; Rindi, A., . . September 18, 1978, . . NTIS (U.S. Sales Only), PC A02/MF A01

INIS-mf-7747 Application of the Finite Element Method to Neutronics Problems with Inhomogeneous Boundary Conditions., . . Yoo, K.J., . . 1982, . . NTIS (U. S. Sales Only), PC A04/MF A01

INIS-mf-7848 (In Portuguese); Thesis (In Portuguese) Sensitivity Calculations of Integral Parameters by a Generalized Perturbation Theory., . . de Santo, A.C.F., . . December 1981, . . NTIS (U.S. Sales Only), PC A15/MF A01

INIS-mf-8100; CONF-8009308-24 Radiation Protection Standards., . . Koelzer, W., . . 1980, . . NTIS (U.S. Sales Only), PC A02/MF A01

INIS-SU-57, pp.7-14 (In Russian) Sliding Rule-Homogram for Calculation of a Shield from Extended Radioisotope Gamma Sources., . . Terent'ev, B.M., . . 1980, . . Mf available from INIS.

LA-9741-MS Calculation of Terrestrial Gamma-Ray Fields in Airborne Radiometric Surveys., . . Evans, M.L., . . July 1983, . . NTIS

LA-9837-MS Calculated Response Contributions of Gamma Rays Emitted from Fuel Pins in an Irradiated PWR Fuel Assembly., . . Phillips, J.R.; Bosler, G.E., . . August 1983, . . NTIS

LBL-15578; CONF-821189-1 CAD/CAM from the Graphic-Design Perspective., . . Marcus, A., . . November 1982, . . NTIS, PC A02/MF A01

NASA-CR-166113; N83-25431 A Comparative Study of Finite Element and Finite Difference Methods for Cauchy-Riemann Type Equations. Final Report., . . Fix, G.J., . . March 1983, . . NTIS

NASA-CR-170513; N83-26567 Application of Kalman Filters to Robot Calibration. Final Technical Report., . . Whitney, D.E.; et al., . . January 1983, . . NTIS, MF A01

NRPB-GS1 Radiological Protection Objectives for the Disposal of Solid Radioactive Wastes., . . National Radiological Protection Board, . . October 1983, . . Publications Officer, NRPB, Chilton, Didcot, Oxfordshire, England; HMSO - 2.00pounds

NUREG/CR-1756, ADD Technology, Safety and Costs of Decommissioning Reference Nuclear Research and Test Reactors (Sensitivity of Decommissioning Radiation Exposure and Costs to Selected Parameters)., . . Konzek, G.J., . . July 1983, . . NRC; GPO; NTIS

NUREG/CR-2837; PNL-4327 PNL Technical Review of Pressurized Thermal Shock Issues., . . Pedersen, L.T.; Apley, W.J.; Bian, S.H., . . July 1982, . . NTIS; GPO

ORNL/CSD/TM-203 The Statistical Sampling Plan for the TRU Waste Assay Facility., . . Beauchamp, J.J.; Wright, T.; Schultz, F.J.; Haff, K.; Monroe, R.J., . . August 1983, . . NTIS

ORNL/TM-8712 EBT Reactor Analysis., . . Uckan, N.A.; Jaerger, E.F.; Santoro, R.T.; Spong, D.A.; Uckan, T.; Owen, L.W.; Barnes, J.M.; McBride, J.B., . . August 1983, . . NTIS, PC A08/MF A01

ORNL-tr-5038; RNDL-82 (In Russian) Recommended Cross Sections of Activation Detectors (RNDL-82) - Part 1. Cross Sections of (n,p) Reactions., . . Bondars, K.Y.; Lapenas, A.A., . . 1983, . . Translated by Languages Services, Knoxville, TN

PNL-SA-11035; CONF-830695-6 Spectral and Dosimetric Measurements of Photon Fields., . . Roberson, P.L., . . June 1983, . . NTIS, PC A02/MF A01

PNL-SA-11248; CONF-830523-16 Radionuclide Characterization, Migration, and Monitoring at a Commercial Low-Level Waste Disposal Site., . . Kirby, L.J.; Toste, A.P.; Rickard, W.H., . . May 1983, . . NTIS, PC A02/MF A01

SAI-02383-458LJ/APPAT-8 Alternate Fuels in Fusion Reactors., . . Dobrott, D., . . May 1983, . . NTIS, PC A02/MF A01, . . Presented at the Fifth Topical Meeting on the Technology of Fusion Energy, April 26-28, 1983, Knoxville, TN

SAND-80-2303 Evaluation of Three Partially Volatile Neutron Shields for High-Performance Shipping Casks., . . Rack, H.J.; Pearson, H.S., . . February 1981, . . NTIS, PC A03/MF A01

SAND-83-0660 Radionuclide Transport Code Development in Support of Nuclear Waste Storage Investigations., . . Martinez, M.J.; Bixler, N.E., . . March 1983, . . NTIS, PC A04/MF A01

SKBF-KBS-TR-82-11 Radiation Levels and Absorbed Doses Around Copper Canisters Containing Spent LWR Fuel., . . Lundgren, K., . . August 11, 1982, . . NTIS (U.S. Sales Only), PC A04/MF A01

SRI-6876-Suppl. Upgrading Basements for Combined Nuclear Weapons Effects: Predesigned Expedient Options II. Supplement. Final Technical Report., . . Murphy, H.L., . . July 1980, . . SRI, Menlo Park, CA 94025

UCRL-Trans-11874 Neutron Dosimetry., . . Jozsef, P., . . 1982, . . NTIS, PC A02/MF A01, . . Translated from Fiz. Sz., 32, No.4, 142-148(1982)

UKNDC(83)P109; NEANDC(E)242 Vol.8; INDC(UK)-37/LN U.K. Nuclear Data Progress Report for the Period, January-December 1982., . . Findlay, D.J.S. (Ed.), . . April 1983, . . Publications Office, AERE Harwell, Oxfordshire, England OX11 ORA

Atomkernenergie, 37(2), 141 (In German) Application of Dose Factors for Decay Chains., . . Keil, W.; Dincklage, R.D. von, . . 1981, . . Published in summary form only.

Czech. J. Phys., 30(5), 503-508 An Application of the Monte Carlo Method to Determine an Active Volume of a Semiconductor Detector., . . Kozma, P.; Bem, P.; Vincour, J., . . 1980

Health Phys., 45(3), 665-686 Dose-Rate Conversion Factors for External Exposure to Photons and Electrons., . . Kocher, D.C., . . September 1983

Hoken Butsuri, 18, 49-55 (In Japanese) Estimation of Dose to Man from Fallout $^{239 A 240}$Pu., . . Shinohara, K.; Yamato, A., . . 1983

Nucl. Instrum. Methods, 201(2,3), 445-449 Tritium Breeding Measurements in a Lithium Aluminate Blanket Assembly Using Thermoluminescent Dosimeters., . . Sharabati, H.; Heckler, R.; Joneja, O.P., . . October 15, 1982

Nucl. Sci. Eng., 85(2), 87-115 Validated Deep-Penetration, Air-over-Ground, Neutron/ Gamma-Ray Transport., . . Loewe, W.E.; Turin, W.A.; Pollock, C.W.; Springer, A.C.; Richardson, B.L., . . October 1983

Nucl. Sci. Eng., 85(2), 127-132 A Proposed Technique for Producing High-Purity Monoenergetic Neutron Beams Between 100 eV and 2.5 keV for Nuclear Research., . . Mill, A.J., . . October 1983

Nucl. Technology, 63(1), 110-120 Oxidation and Radiation Buildup on Stainless Steel Components of Boiling Water Reactors., . . Romeo, G., . . October 1983

Nucl. Technology, 63(1), 170-175 Unfolding Triga Reactor Neutron Spectra from Multicomponent Activation Detector Data with Louhi82., . . Sandberg, J. V.; Routti, J.T., . . October 1983

Nucl. Technology/Fusion, 4(2), Parts 2(1-730) and 3(731-1518); CONF-830406, Parts 2(1-730) and 3(731-1518) Proceedings of the Fifth Topical Meeting on the Technology of Fusion Energy (Knoxville, Tennessee, April 26-28, 1983.), . . Scott, J.L. (Ch.), . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.155-160; CONF-830406, pp.155-160 A Comparison of Fusion Breeder/Fission Client and Fission Breeder/Fission Client Systems for Electrical Energy Production., . . Land, R.J.; Parish, T.A., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.161-166; CONF-830406, pp.161-166 Thorium Oxide Slurries as Blankets for Fissile Producing Fusion Reactors., . . Geer, T.C.; Parish, T.A., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.167-172; CONF-830406, pp.167-172 Tritium-Assisted D-D Based Fusion Breeders., . . Greenspan, E.; Miley, G.H., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.355-360; CONF-830406, pp.355-360 Streaming and Shielding Analysis for the NBI System of TDF., . . Sawan, M.E., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.361-366; CONF-830406, pp.361-366 Assessments of Tritium Breeding Requirements and Breeding Potential for the STARFIRE/DEMO Design., . . Jung, J.; Abdou, M., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.367-372; CONF-830406, pp.367-372 Monte Carlo Calculations of Neutron and Gamma-Ray Energy Spectra for Fusion Reactor Shield Design: Comparison with Experiment., . . Santoro, R.T.; Barnes, J.M., . . September 1983, . . Announced previously as ORNL/TM-8707.

Nucl. Technology/Fusion, 4(2), Pt.2, pp.381-386; CONF-830406, pp.381-386 Monte Carlo Neutronic Analysis for the TFTR Lithium Blanket Module., . . Engholm, B.A., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.2, pp.701-706; CONF-830406, pp.701-706 The Nuclear Design of a Very Low Activation Fusion Reactor., . . Cheng, E.T.; Hopkins, G.R., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.799-804; CONF-830406, pp.799-804 Fusion Reactor Blanket Neutronic Studies in France., . . Barre, F.; Gervaise, F.; Giancarli, L., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.805-810; CONF-830406, pp.805-810 Nucleonics of a Be-Li-Th Blanket for the Fusion Breeder., . . Lee, J.D., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.811-816; CONF-830406, pp.811-816 Aqueous Slurries as Tritium Breeding Blankets for D-T Fusion Reactors., . . Parish, T.A.; Erwin, R.D.; Schuller, M.J., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.817-822; CONF-830406, pp.817-822 A Benchmark Experiment on Tritium Production and Radiation Heating in the LiF Assembly., . . Igushi, T.; Sekiguchi, A.; Nakazawa, M., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.823-828; CONF-830406, pp.823-828 The Dependence of Neutron-Induced Radioactivity in Fusion Reactors on Geometric Design Parameters., . . Lasche, G.P.; Blink, J.A., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.835-840; CONF-830406, pp.835-840 Neutronics Analysis for the MARS Li-Pb Blanket and Shield., . . Huang, J.H.; Sawan, M.E., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.841-845; CONF-830406, pp.841-845 Cross Section Sensitivity Study for U.S. Fusion Engineering Device (FED)., . . Pelloni, S.; Cheng, E.T., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1159-1164; CONF-830406, pp.1159-1164 EBT-P Gamma Ray Shielding Analysis., . . Gohar, Y., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1165-1170; CONF-830406, pp.1165-1170 Measurements of Angular Flux on Surface of Li_2O Slab Assemblies and Their Analysis by a Direct Integration Transport Code –BERMUDA–., . . Maekawa, H.; Oyama, Y.; Suzuki, T.; Ikeda, Y.; Nakamura, T., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1171-1176; CONF-830406, pp.1171-1176 MARS Axicell Radiation Damage and Shielding Analysis., . . El-Guebaly, L.; Perkins, L.J.; Maynard, C., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1177-1182; CONF-830406, pp.1177-1182 On Isotopic Tailoring for Fusion Reactor Radioactivity Reduction., . . Youssef, M.Z.; Conn, R.W., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1189-1194; CONF-830406, pp.1189-1194 Intercomparison of Nuclear Data Library Sources; Group Structures and Collapsing Spectra for INTOR-EC., . . Pelloni, S.; Stepanek, J.; Dudziak, D.J., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1195-1200; CONF-830406, pp.1195-1200 Development of the Two-Dimensional Cross-Section Sensitivity and Uncertainty Analysis Code SENSIT-2D with Applications to the FED., . . Embrechts, M.J.; Dudziak, D.J.; Urban, W.T., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1203-1215; CONF-830406, pp.1203-1215 Overview of First Wall/Blanket/Shield Technology., . . Nygren, R.E., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1216-1221; CONF-830406, pp.1216-1221 A Fission-Based, Distributed, 14-MeV Fusion Neutron Radiation Source for First Wall/Blanket Component Testing and System Development., . . Hsu, P.Y.; Miller, L.G.; Deis, G.A.; Harker, Y.D.; Longhurst, G.R.; Bohn, T.S.; Ottewitte, E.H.; Watts, K.D., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1228-1232; CONF-830406, pp.1228-1232 Progress in Studies of $Li_{17}Pb_{83}$ as Liquid Breeder for Fusion Reactor Blankets., . . Casini, G., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1233-1238; CONF-830406, pp.1233-1238 MARS High Temperature Blanket., . . Gordon, J.D.; Berwald, D.H.; Flanders, B.A.; Garner, J.K.; Mortenson, S.C.; Parmer, J.F.; Sink, C.A.; Yu, J.C.; Agarwal, K.L.; Dharmarajn, S.; Ghoniem, N.M.; Hoffman, N.J.; Bilton, J.R.; Kirstein, B.E., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1239-1244; CONF-830406, pp.1239-1244 Design of a High Temperature First Wall/Blanket for a D-D Compact Reversed Field Pinch Reactor (CRFPR)., . . Dabiri, A.E.; Glancy, J.E., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1245-1250; CONF-830406, pp.1245-1250 High Performance Breeding Blankets for ICF Facilities., . . Larson, A.R.; Bohachevsky, I.O., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1251-1256; CONF-830406, pp.1251-1256 Low Activation Fusion Reactor Design Studies., . . Hopkins, G.R.; Cheng, E.T.; Creedon, R.L.; Maya, I.; Schultz, K.R.; Trester, P.; Wong, C.P.C., . . September 1983

Nucl. Technology/Fusion, 4(2), Pt.3, pp.1257-1262; CONF-830406, pp.1257-1262

Lifetime Analysis of Fusion Reactor Components., . . Mattas, R.F., . . September 1983

BOOK NEUTRON RADIOGRAPHY., . . Barton, J. P., . . 1983, . . Dordrecht, Holland; D. Reidel Pub. Co.

BOOK BIOLOGICAL EFFECTS OF RADIATION. 2nd Edition., . . Coggle, J.E., . . 1983, . . New York; International Publication Service, Taylor and Francis, 1983

BOOK NUCLEAR FISSION REACTORS., . . Cameron, I.R., . . 1982, . . New York; Plenum Press

BOOK; ASTM-STP-784 Status of USA Nuclear Reactor Pressure Vessel Surveillance for Radiation Effects., . . Steele, L.E., . . January 1983, . . 1916 Race St., Philadelphia, PA: American Society for Testing and Materials

Computer Codes Literature

AEEW-R-1322 . . . . . WIMS-E; W-HEAD
WIMS-E Module W-HEAD., . . Roth, M.J., . . UKAEA Atomic Energy Establishment, Winfrith, UK, . . April 1980

CEA-CONF-5517; CONF-800942-34, 22 . . . . . FAST REACTOR PHYSICS
Fast Reactor Physics at CEA: Present Studies and Future Prospects., . . Hammer, P., . . CEA Centre d'Etudes Nucleaires de Cadarache, 13-Saint-Paul-les-Durance, France, . . September 1980

CONF-8010113, 35-42 . . . . . CROSS SECTION LIBRARIES
Status of Multigroup Cross-Section Libraries Available from the Radiation Shielding Information Center., . . Roussin, R.W.; Trubey, D. K.; Maskewitz, B.F., . . Oak Ridge National Laboratory, TN, . . October 1980

CONF-8010113, 89-108 . . . THERMAL REACTORS
Shielding Data Requirement for Thermal Power Reactors of Boiling Water and Gas Cooled Type., . . Hehn, G.; Kicherer, G., . . Stuttgart University, Germany, . . October 1980

CONF-8010113, 249-261 . . . . . JASON
Experimental Program JASON Associated with the Optimization of Neutron Shielding of the French Fast Reactor System., . . Trapp, J.P. Valenza, R.; Vienot, R., . . CEA Centre d'Etudes Nucleaires de Cadarache, 13-Saint-Paul-les-Durance, France, . . October 1980

CONF-8010113, 403-417 . . . . . PROPANE
Qualification of the Adjustment Method of Nuclear Data Used for PROPANE Code Optimization., . . Estiot, J.C., . . CEA Centre d'Etudes Nucleaires de Cadarache, 13-Saint-Paul-les-Durance, France, . . October 1980

EGG-PHYS-5441 . . . . . KENO
Criticality Safety Evaluation for SNM Vessels in S-Cell., . . Briggs, J.B.; Jones, R.R.; Putnam, G.E., . . EG and G Idaho, Idaho Falls, ID, . . May 1981

EUR-6813, Vol. 2, 732-742 . . . . . SENSAK
Few-Channel Unfolding in Shielding - the SENSAK Code., . . McCracken, A.K., . . UKAEA Atomic Energy Establishment, Winfrith, UK, . . October 1979

FOA-C-20376 . . . . . BAC
BAC - A Computer Code for the Calculation of the Shielding Factor of a Building During the Initial Radiation., . . Danielson, G., . . Foersvarets Forskningsanstalt, Stockholm, Sweden, . . October 1980

Health Phys., 40(2), 243-245 . . . . . REBEL-3
Phantom Organ Shielding Factors for Radiation From Walls of Buildings., . . Koblinger, L., . . Hungarian Academy of Sciences, Budapest, Central Research for Physics, Hungary, . . February 1981

Ho Tzu K'O Hsueh, 17(4), 183-189 . . . . . POWER PLANT SHIELDING
INER Shielding Code Establishment for Nuclear Power Plant Shielding Design., . . Su, M.F., . . Inst. of Nuclear Energy Research, Lung-tan, Taiwan, . . December 1980

IKE-4-99 . . . . . RSYST
RSYST - Fields of Application., . . Ruehle, R., . . Stuttgart University, Germany, . . April 1980

INIS-SU-25, 160-163 . . . RADIATION MODELING
Complex of Programs for Calculating Radiation Fields Outside Plane Protecting Shields, Bombarded by High-Energy Nucleons., . . Gel'Fand, E.K.; Man'Ko, B.V.; Serov, A.Ya.; Sychev, B.S., . . December 1978

JAERI-1267 . . . . . TIMS-1
TIMS-1: A Processing Code for Production of Group Constants of Heavy Resonant Nuclei., . . Takano, H.; Ishiguro, Y.; Matsui, Y., . . Japan Atomic Energy Research Inst., Tokyo, Japan, . . September 1980

KAERI-430/RR-163/80 . . . . . SHIELDING COMPILATION
Compilation of the Computing Methods in Radiation Shielding., . . Moon, P.S.; Ha, C.W.; Kwon, S.G.; Lee, J.H.; Suh, K.W., . . Korea Atomic Energy Research Inst., Seoul, Korea, . . 1980

Mem. Fac. Eng., 41(2), 148-158 . . . . . NEUTRON PENETRATION
Monte Carlo Calculations of Neutron Penetration Through Graphite and Polyethylene at Energies of 30 and 45 Mev., . . Uwamino, Y.; Shin, K.; Yoshida, M.; Hyodo, T., . . Kyoto University, Japan, . . April 1979

Nucl. Sci. Eng., 78(2), 175-177 . . . . . UNFOLDING
Monte Carlo Self-Shielding Corrections for Use with Neutron Spectrum Unfolding Codes., . . Brenner, D.J., . . Los Alamos Scientific Laboratory, NM, . . June 1981

Pap. Ship Res. Inst., 57, 1-47 . . . PALLAS-2DCY-FC
PALLAS-2DCY-FC, A Calculational Method and Radiation Transport Code in Two-Dimensional (r, z) Geometry., . . Takeuchi, K., . . Ship Research Inst., Tokai, Japan, . . July 1979

Senpaku Gijutsu Kenkyujo Hokoku, 16(6), 329–359. . . . . PALLAS-2D
Measurement and Calculation of Radiation Streaming Through Annular Ducts., . . Miura, T.; Takeuchi, K.; Fuse, T., . . Ship Research Inst., Tokai, Ibaraki, Japan, . . November 1979

Stud. Cercet. Fiz., 32(10), 1093-1109 . . . . . RELI; COGE; ACTA
Programs for the Calculation of Radioactive Sources Shielding., . . Barna, A.; Oncescu, M., . . Institutul de Fizica Si Inginerie Nucleara, Bucharest, Romania, . . 1980