

RSIC Newsletter



Oak Ridge National Laboratory
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Research is the reconnaissance party of industry, roving the unknown territories ahead independently, yet not without purpose, seeing for the first time what all the following world will see a few years hence.—S. M. Kinter

DATA COORDINATOR VISITS ASIA-PACIFIC

The RSIC data coordinator, John E. White, recently spent one month at the Bangladesh Atomic Energy Research Establishment in Savar on an assignment sponsored by the International Atomic Energy Agency (IAEA). The technical assistance mission provided guidance to specialists at the Institute of Nuclear Science and Technology (INST) on the implementation of computer codes and data for the effective utilization and analysis of a 3-megawatt TRIGA MARK-II research reactor. The specialists at INST have access to an IBM 4341 computer operating under the DOS operating system.

Beijing, People's Republic of China, was next on the itinerary where White visited the Chinese Nuclear Data Center (CNDC) at the Institute of Atomic Energy. A presentation on multigroup cross

section processing methods used at ORNL was given followed by discussions on the approach used at CNDC and alternatives for ENDF/B-VI processing for data testing.

The Department of Nuclear Engineering at Osaka University, Japan, was the next stop. White participated in a US-Japan Workshop on Fusion Neutronics and also visited the Japanese Atomic Energy Research Institute (JAERI) at Tokai for an orientation and tour of the site of the experimental Fusion Neutron Source (FNS) of the JAERI/US-DOE joint program in fusion neutronics. During the visits to Bangladesh, China, and Japan, White stressed the importance of reciprocity in the exchange of technical information within the RSIC scientific community.

CHANGES TO THE COMPUTER CODE COLLECTION

Six changes were made to the computer code collection during the month. Two new code systems were packaged and added to the collection; an existing code package was replaced with a newly frozen version; and the documentation or software of three code packages was updated. One new code package resulted from a foreign contribution.

CCC-179/ATR5

This code package was updated to correct a few minor errors by the developers at Science Applications International Corporation of San Diego, California. ATR5 predicts energy-angular radiation environments from neutron, gamma-ray, and X ray sources created by a nuclear burst in the

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atmosphere. The new revision is dated April 1, 1989. Information on the changes is available from RSIC upon request. ATR5 is written primarily in FORTRAN 66 but includes some FORTRAN 77 statements and is designed to be system independent. The package is available either on tape or diskette (1 HD). References: Excerpts from DNA Draft, SAIC-88/1911 (1989) and transmittal letter (April 1989). FORTRAN; CRAY, CDC, VAX, IBM PC-AT.

CCC-459B/BOLD VENTURE IV - MICRO

The executable file of the microcomputer version of this reactor analysis code system was replaced. A user at the Georgia Institute of Technology, Atlanta, alerted RSIC of errors encountered when running the executable file from the RSIC package. Users requesting the package after May 11, 1989, received the correct executable file (dated 7/12/88). Five DS/HD (1.2 MB) diskettes are required for transmittal of the entire package; three DS/HD diskettes are required for the executable file. Reference: Informal documentation, Univ. of Cincinnati (1988). FORTRAN 66; IBM 3033 (A) and FORTRAN 66 and 77; IBM PC (B).

CCC-484/DORT

The documentation for this two-dimensional discrete ordinates transport code system was updated with informal notes on modifications required to convert the COS version to UNICOS. Knolls Atomic Power Laboratory, Schenectady, New York, supplied the information on changes they made to run DORT using the cft77 compiler. References: ORNL-5851 (April 1982), ORNL/TM-8362 (September 1982), and Informal Notes (1988). FORTRAN and CAL, CRAY (A); FORTRAN and ASSEMBLER, IBM 3033 (B).

CCC-515/KUX MICRO

This solution for the shielding of medical X rays and mammography by the methods in NCRP Report No. 49 was contributed by Douglas J. Simpkin of the Department of Radiology, St. Luke's Medical Center, Milwaukee, Wisconsin. KUX calculates the thickness of barrier materials required to bring the weekly exposure near an X ray or mammography room down to the maximum permitted. Shielding data from the literature are

included in DATA statements for lead, concrete, gypsum, steel, and plate glass. KUX is an updated FORTRAN version of the BASICA program CCC-509/KUXKVPS. An executable file produced by the MSFORT Version 4.01 compiler is included. KUX was also tested on a VAX 8650 under VMS. The program is available from RSIC on one DS/DD diskette. References: *Health Physics* 52,431-436 (1987), 53,267-279 (1987) and 56,151-164 (1989). FORTRAN 77; IBM PC and VAX.

CCC-541/FDKR

This radioactivity and dose rate calculation code system for fission, fusion, and hybrid reactors was contributed by the Southwestern Institute of Physics, Leshan, Sichuan, People's Republic of China. FDKR is based on CCC-323/DKR, which originated at the University of Wisconsin in 1976. While the original DKR code was developed for fusion reactors, FDKR has been extended for use with fission and hybrid reactors as well. The construction of linear decay chains and the solution of activation product chains are those adopted from DKR. The generation and loss rates of fission products are added to the relevant chains. The AFDCDLIB library was specially designed for FDKR and contains data for activation products, fission products, and actinides. The neutron flux from a transport calculation with a neutral particle transport code such as CCC-254/ANISN-ORNL or CCC-428/ONEDANT is required input for FDKR. The code system runs on the IBM 4381 under VM/SP and requires approximately 8 megabytes of virtual memory and 4 megabytes of core storage. References: SWIP (March 1988). FORTRAN 77; IBM 4381.

PSR-243/CGS

A newly frozen version of this general purpose graphics system was contributed by Los Alamos National Laboratory, Los Alamos, New Mexico. CGS Version 10 is available for the VAX family of computers running both VMS and UNIX operating systems, Cray computers running CTSS, and the Sun workstation running the UNIX operating system. Each version is transmitted via one 5.25-in. DS/HD (1.2 MB) diskette. The three dimensional modeling program, PSR-242/SABRINA, will soon be updated to be compatible

with this version of CGS. References: LANL GR801 (Dec. 1985), GR801.1 (July 1988), GR800 (Dec. 1985), GR800.1 (Oct. 1988), GR864 (Nov.

1985), GR805 (Oct. 1985) and informal documentation (1985 and 1979). FORTRAN 77 VAX/VMS (A), CRAY/CTSS (B); FORTRAN 77 and C SUN/UNIX (C) and VAX/UNIX (D).

CHANGE TO THE DATA LIBRARY COLLECTION

One new data library was added to the data library collection.

DLC-136/PHOTX

The National Institute of Standards and Technology, Gaithersburg, Maryland, and Oak Ridge National Laboratory contributed this library of photon interaction cross sections. This compilation of PHOTX Version 2 represents best values of evaluated photon cross sections as determined in 1987 and includes interaction cross sections and attenuation coefficients for 100 elements covering the energy range 1 keV to 100 GeV. The reactions considered are coherent and incoherent scattering,

photoelectric absorption, and pair production. A separate table gives the photo-effect cross section for each electron shell. Included in the package is a FORTRAN 77 program for the retrieval and display of the partial interaction coefficients and total attenuation coefficients for any selected element. The PC version was tested using the Ryan-McFarland Version 2.42 compiler and requires a math co-processor. It is available on either three 5.25-in DS/DD (360K) diskettes or one 1.2 MB diskette. The mainframe version is distributed on magnetic tape. References: ANS paper (April 1989) and Informal Notes (December 1988). FORTRAN 77; IBM PC (A) or DG and VAX family (B).

PERSONAL ITEMS

In serving a specialized area of scientific endeavor, it seems important that we note significant changes in the activities 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.

Leo G. LeSage was appointed director of the Engineering Physics Division at Argonne National Laboratory. LeSage has been with the laboratory since 1966. He was director of the Applied Physics Division when it was combined with the Engineering Division to form the Engineering Physics Division.

John A. Mayer was elected chairman of the Massachusetts Low-Level Radioactive Waste Management Board. Mayer is director of the nuclear engineering program at Worcester Polytechnic Institute.

John H. Hubbell, W. J. Veigele, E. A. Briggs, R. T. Brown, D. T. Cromer, and R. J. Howerton are the authors of a paper recently cited by the Institute for Scientific Information as a "citation classic." "Atomic form factors, incoherent scattering functions, and photon scattering cross sections," appeared in the *J. Phys. Chem. Ref. Data* 4:471-538, 1975; and Erratum *J. Phys. Chem. Ref. Data* 6:615-6, 1977. It is a review of available

theoretical and measured atomic form factors and incoherent scattering functions and presents extended-range tables of these quantities for all neutral atoms $Z - 1$ to 100, plus bonded and molecular hydrogen.

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Jason E. Huffer* and *William A. Heineken*, Paducah Gaseous Diffusion Plant, Kentucky; *John W. Poston, Jr.*, IT Corporation, Knoxville, Tenn.; *Pete Studer*, TVA, Knoxville, Tenn.; and *Ivo Petr*, a Fulbright Scholar at the University of California at Berkeley, from Prague Technical University in Czechoslovakia.

PUBLICATIONS

Current publications of interest to the radiation shielding, protection, and transport community are summarized below.

Determination of Dose Equivalents from External Radiation Sources—Part II, ICRU Report 43, is the second of a three-part series produced by the International Commission of Radiation Units and

Measurement (ICRU) to provide guidance on the determination of dose equivalents from external radiation sources. \$17.00

Guidance on Radiation Received in Space Activities, NCRP Report No. 98, develops guidance on radiation exposures occurring in space activities using information on the space radiation environment and the biological effects of radiation developed since 1970. Major sections of the report treat radiation environments in space, radiation exposure to personnel, radiobiological features of the space radiation environment, and radiation protection standards in space. \$17.00

Quality Assurance and Measurement in Diagnostic Imaging, NCRP Report No. 99, addresses quality control and quality assurance in the production of diagnostic images. \$18.00

Nonionizing Electromagnetic Radiations and Ultrasound, NCRP Proceedings No. 8, is the proceedings of the 22nd Annual Meeting of the NCRP held April 2-3, 1986. It includes materials presented on radiofrequency electromagnetic radiation, magnetic fields, and ultrasound, and the Tenth Lauriston Taylor Lecture, "Nonionizing Radiation Bioeffects: Cellular Properties and Interactions," by Herman P. Schwan. \$28.00

The preceding documents may be obtained from ICRU Publications, or NCRP Publications, 7910 Woodmont Ave., Bethesda, Maryland 20814.

The 1988 Minicourse on Fusion Applications in Space, a collection of materials distributed at the course held October 9, 1988, in Salt Lake City, Utah, has been made available for a cost of \$25. Send \$25 plus \$2 for shipping outside the U.S. to George H. Miley, University of Illinois, Fusion Studies Laboratory, 103 S. Goodwin Ave., Urbana, IL 61801.

CONFERENCES, COURSES, SYMPOSIA

RSIC attempts to keep its users/contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers to RSIC.

Waste Management '90 Call for Papers

The Sixteenth Annual Waste Management Symposium, WM '90, to be held February 25-March 1, 1990, in Tucson, Arizona, has issued a call for papers. Invited and contributed papers are solicited on research, devel-

opment, and operational experience in high- and low-level nuclear waste, mixed waste, mill tailings, and decommissioning management, national and international agreements, regulations governing these topics, and environmental impact of these activities. The topic titles and the topic coordinator are listed below. Contact the topic coordinator for technical questions.

Status of International Nuclear Waste Management — *James Strahl*, WESTON, 202-646-6634.

Public Issues in Nuclear Waste Management — HLW, LLW, TRU, and RMW — *Linda Ulland*, ESA, 415-896-5900.

Transportation of Nuclear Waste — Concepts, Systems, and Issues — *Larry Harmon*, USDOE, 301-353-3506.

Industry Concerns in Nuclear Waste Management — *Sheila Little*, WEC, 412-374-2096.

Quality Assurance and Quality Control in Radioactive and Mixed Waste Management — *Mary Gerry White*, Univ. of Arizona, 602-621-6157.

Hydrogeologic Considerations in Disposal of Nuclear Waste — *Eugene Simpson*, Univ. of Arizona, 602-621-1855.

Status of the Technical Investigations at Yucca Mountain — *Scott Dam*, WESTON, 202-646-6660, and *Larry Ramspott*, LLNL, 415-447-5167.

HLW Nuclear Materials Characterization, Package Design and Performance — *Ned Bibler*, SRL, 803-725-2313.

Treatment and Storage Technology of HLW (Including Status and Issues) — *Larry Ramspott*, LLNL, 415-447-5167.

Spent Fuel System Management Including Disposal — *Bala Nair*, WEC, 412-374-2401.

TRU Processing and Disposal and Regulatory Issues — *Tom Smith*, EG&G-ID, 208-526-0009.

LLW Characterization and Classification — *Russell Propst*, Duke Power, 704-373-2377.

LLW Processing, Packaging, and Meeting Certification Standards — *Dick Doyle*, USE, 704-376-5752.

Plans and Actions for USDOE Environmental Restoration Program — *Julie D'Ambrosia*, ASG, 301-587-8750.

RCRA/CERCLA-SARA Issues and Permitting — *Harry Babad*, WHC, 509-376-8510.

Groundwater Protection and Remediation, Treatment and Standards — *Don Wood*, WHC, 509-376-7832.

Short- and Long-Term Monitoring Experience in Remedial Action Technique Used in Clean Up — *Jas Devgun*, ANL, 312-972-3488.

Compact Decisions, Licensing and Regulation of New Radioactive and Mixed Waste Disposal Facilities — *Ed Helminski*, RE, 202-547-4081.

Environmental Monitoring and Compliance in LLW and RMW Disposal Systems — *Tom Hillmer*, ANPP, 602-393-2762.

Mixed Waste Characterization and Processing — *Leon Borduin*, LANL, 505-667-7391.

Mixed Waste Storage and Disposal — *Myron Kaczmarzsky*, WasteChem, 201-599-2900.

General — *Mort Wacks*, Univ. of Arizona, 602-621-6160.

Those interested in contributing a paper are invited to submit an extended summary to the Technical Program Chairman, M. E. Wacks, Department of Nuclear and Energy Engineering, Univ. of Arizona, Tucson, AZ 58721 (phone 602-621-6160, Fax 602-792-3993), by **September 1, 1989**. Authors will be notified of accep-

tance by November 7, 1989, and the completed papers are required by February 1, 1990.

Practical Radiation Shielding

Practical Radiation Shielding is a course offered by the Georgia Institute of Technology (Georgia Tech) intended for nuclear engineers, health physicists, and other professionals engaged in radiation control at nuclear facilities. The course is conducted by Georgia Tech and Shonka Research Associates, Inc., September 5–8, 1989, in Atlanta. The \$975 course fee includes the text, class notes, and public domain software. Course emphasis is on personal computer-based solutions to dose rate and shielding problems. The course includes training on (1) MICROSHIELD — interactive analysis of gamma ray sources including N-16, waste packages, shipping containers, etc.; (2) ISOSHLD — bremsstrahlung sources and spent fuel; (3) QAD — complex source and shield geometries simplified by combinatorial geometry; (4) ORIGEN — fission product, activation product, and actinide inventories; and (5) and introduction to transport theory (ANISN), Monte Carlo, and scattering codes (G3). Further information may be obtained from Education Extension, Georgia Tech, Atlanta, GA 30332-0385 (phone 404-894-2547).

Calendar

Your attention is directed to the following events of interest.

July 1989

Workshop on Geological Problems in Radioactive Waste Isolation — A Worldwide Review, July 15–16, 1989, Washington, sponsored by the International Union of Geological Sciences and the International Association of Hydrogeologists, in cooperation with the IAEA. Contact: Paul A. Witherspoon, phone 415-642-5390 or 415-486-5082.

Radioactive Material Transportation Workshop, July 17–20, 1989, Idaho Falls, Idaho. Contact: Teresa Yearwood, SAIC, P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031 ext. 403).

26th IEEE Annual Conference on Nuclear and Space Radiation Effects, July 24–28, 1989, Marco Island, Florida. Contact: Dante M. Tasca, General Electric Co., Room M1211, Bldg. 100, P.O. Box 8555, Philadelphia, PA 19101 (phone 215-354-4132).

Radioactive Material Transportation Workshop, July 31–Aug. 3, 1989, Kennewick, Washington. Contact: Teresa Yearwood, SAIC, P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031 ext. 403).

August 1989

International Nuclear Physics Conference, Aug. 20–26, 1989, São Paulo, Brazil, sponsored by the International Union of Pure and Applied Physics. Contact: Universidade de São Paulo, Departamento de Física Nuclear, Caixa Postal 20516, 01498 São Paulo, SP, Brazil.

11th Annual DOE Low-Level Waste Management Conference, Aug. 22–24, 1989, Pittsburgh, Pennsylvania. Contact: Marjorie Clearwater, EG&G Idaho, Low Level Waste Program, MS-2411, Box 1625, Idaho Falls, ID 83415 (phone 208-526-9197).

September 1989

International Hazardous Waste Conference, Sept. 10–13, 1989, Pittsburgh, Pennsylvania, sponsored by the NUS Corporation. Contact: Marilyn Doethorn, NUS Corp., Park West Two, Pittsburgh, PA 15275 (phone 800-245-2730 or 412-788-1080).

International Meeting on Neutron Activation Cross Section for Fission and Fusion Energy Applications, Sept. 11–15, 1989, Argonne, Illinois,

sponsored by IAEA. Contact: Phyllis Michaels, EPD, Argonne National Laboratory, 9700 South Cass Ave., Argonne, IL 60439.

4th Annual Hazardous Waste and Hazardous Materials Management Conference and Exhibition, Sept. 12-14, 1989, sponsored by the Institute for International Research, Inc. Contact: Rachelle Scheinbach, HAZTECH International, 13555 Bel-Red Road, C-96870, Bellevue, WA 98009 (phone 800-648-7644 or 206-746-4173).

Nuclear Waste Isolation in the Unsaturated Zone: FOCUS '89, Sept. 18-21, 1989, Las Vegas, Nevada, sponsored by the ANS. Contact: D. Burton Siemmons, University of Nevada-Reno, School of Mines, LME 400, Reno NV 89557-0047 (phone 702-784-6067) or Joy H. Fiore, Science Applications International Corp., 101 Convention Center Drive, Suite 407, Las Vegas, NV 89109 (702-794-7639).

International Workshop on New Developments in Occupational Dose Control and ALARA Implementation at Nuclear Power Plants and Similar Facilities, Sept. 18-21, 1989, Brookhaven National Laboratory, Upton, New York. Contact: Dr. John W. Baum, BNL ALARA Center, Bldg. 703M, Upton, NY 11973 (phone 516-282-4214).

Seminar on Radioactivity Transfer During Food Processing and Culinary Preparation, Sept. 18-21, 1989, Cadarache, France, sponsored by the Commission of the European Communities (CEC). Contact: G. Gouvras, CEC, DG XI/A/1, Jean Monnet Building, C4/46, L-2920 Luxembourg (phone 4301-2718/2730).

EGS4 Course, Sept. 25-28, 1989, Middlesex, England, sponsored by the National Physical Laboratory. Contact: Dr. S. Duane, National Physical Laboratory, Teddington, Middlesex TW11 0LW U.K. (phone 01-943-6568; Telex 262344 NPLG; Fax 01-943-2155).

October 1989

International Conference on New Trends in Liquid Scintillation Counting and Organic Scintillators, Oct. 2-5, 1989, Gatlinburg, Tennessee, sponsored by Oak Ridge National Laboratory and the University of Georgia. Contact: University of Georgia, Center for Isotope Studies, 120 Riverbend Road, Athens, GA 30605.

13th International Symposium on Fusion Engineering, Oct. 2-6, 1989, Knoxville, Tennessee, sponsored by the American Nuclear Society. Contact: T. E. Shannon, Oak Ridge National ORNL, P.O. Box Y,

FEDC Building, Oak Ridge, TN 37831 USA (phone 615-576-5500 or FTS 626-5500).

International Symposium on Safety Assessment of Radioactive Waste Repositories, Oct. 9-12, 1989, Paris, sponsored by the Commission of the European Communities, IAEA, and the OECD Nuclear Energy Agency. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

International Symposium on the Determination of Foodstuff Contamination After a Nuclear Accident, Oct. 9-13, 1989, Vienna, sponsored by the Food and Agriculture Organization of the United Nations, IAEA, and the World Health Organization. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

First International Conference on Radioactive Nuclear Beams, Oct. 16-18, 1989, Berkeley, California, sponsored by the U.S. Dept. of Energy. Contact: J. M. Nitschke, Nuclear Science Division, Lawrence Berkeley Laboratory, 1 Cyclotron Road, Berkeley, CA 94720 (phone 415-486-6471).

17th Water Reactor Safety Information Meeting, Oct. 23-25, 1989, Rockville, Maryland, sponsored by the Office of Nuclear Regulatory Research, Nuclear Regulatory Commission. Contact: Allen J. Weiss, Meeting Coordinator, Brookhaven National Laboratory, Building 197-C, Upton, New York 11973.

Joint International Waste Management Conference, Oct. 23-28, 1989, Kyoto, Japan, sponsored by the American Society of Mechanical Engineers. Contact: Steve Slate, Pacific Northwest Laboratory, P.O. Box 999, Mailstop A4-90, Richland, WA 99352 (phone 509-376-8019 or FTS 444-8019) or the Japanese Organizing Committee, c/o JSME, 4-9 Yoyogi 2-chome, Shibuya-Ku, Tokyo, Japan.

International Conference on Decommissioning of Nuclear Installations, Oct. 24-27, 1989, Brussels, Belgium, sponsored by CEC. Contact: Mme. F. Rey, Conference Services, Avenue de l'Observatoire 3, Boite 17, B-1180 Brussels, Belgium (phone 32-2-235-8425).

November 1989

International Symposium on Recovery Operations in the Event of a Nuclear Accident or Radiological Emergency, Nov. 6-10, 1989, sponsored by IAEA. Contact: Barbara Thomas, IE-13, U. S. Department of Energy, Forrestal Building, Washington, DC 20585 USA (phone 202-586-6188 or FTS 896-6188).

Selected Topics of Monte Carlo Applications in Science and Technology, Nov. 6–10, 1989, a course sponsored by the Joint Research Centre, Ispra Establishment. Contact: Secretariat "ISPRA-Courses", Centro Comune di Ricerca, I-21020 ISPRA (Varese) Italy (phone 0332-789819/789839/781128).

9th International Conference on Solid State Dosimetry, Nov. 6–10, 1989, Vienna. Contact: Dr. A. Hefner, Austrian Research Center at Seibersdorf, A-2444 Seibersdorf, Austria (02254-80, ext. 2500).

Winter Meeting of the American Nuclear Society, Nov. 26–30, 1989, San Francisco. Contact: Mary J. Keenan, Meetings Manager, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

Scientific Basis for Nuclear Waste Management, Nov. 27–30, 1989, Boston Massachusetts, sponsored by the Materials Research Society. Contact: Conferences, MRS, 9800 McKnight Road, Suite 327, Pittsburgh, PA 15237 (phone 412-367-3003).

December 1989

4th International Conference on Fusion Reactor Materials, Dec. 4–8, 1989, Kyoto, Japan. Contact: Prof. S. Ishino, Dept. of Nuclear Engineering, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.

February 1990

HEART Conference, Feb. 12–16, 1990, Monterey, California. Contact: Thomas A. Tumolillo, Kaman Sciences Corp., P.O. Box 7463, Colorado Springs, CO 80933 (phone 719-599-1718).

March 1990

7th Pacific Basin Conference, Mar. 4–8, 1990, San Diego, California, sponsored by the ANS. Contact: ANS Meetings Department, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

International Conference on Supercomputing in Nuclear Applications, Mar. 12–16, 1990, Mito City, Japan, sponsored by JAERI. Contact: Kiyoshi Asai, Computing Center, JAERI, Tokai-mura, Naka-gun, Ibaraki 319-11, Japan (phone 0292(82)5611; Fax 0292(82)6070).

April 1990

International Conference for High-Level Radioactive Waste Management, April 8–12, 1990, Las Vegas, Nevada. Contact: Dean William Wells, Howard Hughes College of Engineering, UNLV, Las Vegas, NV 89154 (phone 702-739-3699).

June 1990

American Nuclear Society Annual Meeting, June 10–15, 1990, Nashville, Tennessee. Contact: Mary Keenan, Meetings Manager, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

17th European Conference on Controlled Fusion and Plasma Heating, June 25–29, 1990, Amsterdam, The Netherlands. Contact: F. C. Schuller, FOM-Institut voor Plasmafysica "Rijhuizen," Postbus 1207, NL-3430 BE Nieuwegein.

August 1990

International Topical Meeting on Fast Reactor Safety, Aug. 12–16, 1990, Snowbird, Utah, sponsored by the ANS. Contact: Wayne K. Letho, Argonne National Laboratory, P.O. Box 2528, Idaho Falls, ID 83403-2528 (phone 208-526-7369).

Operational Radiation Protection, Aug. 20–22, 1990, Idaho Falls, Idaho, sponsored by the ANS. Contact: Jack Liebenthal, EG&G Idaho, Inc., P.O. Box 1625, Idaho Falls, ID 83415-3515 (phone 208-526-1253).

October 1990

Spectrum '90: Radioactive Waste Technologies, Decontamination, Decommissioning and Hazardous Wastes, Oct. 3–5, 1990, Knoxville, Tennessee, sponsored by ANS. Contact: Thomas H. Row, ORNL, P.O. Box 2008, 4500N MS6198, Oak Ridge, TN 37831-6198 (phone 615-574-5974 or FTS 624-5974).

November 1990

American Nuclear Society Winter Meeting, Nov. 11–16, 1990, Washington, D.C. Contact: Mary Keenan, Meetings Manager, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525.

MAY 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 liter-

ature 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.

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-ESH/TS-88-102, . . *Cursory Radiological Assessment, Battelle Columbus Laboratory Decommissioning and Decontamination Project.*, . . Smith, W.H.; Munyon, W.J.; Mosho, G.D.; Robinet, M.J.; Evnveen, R.A., . . October 1988, . . NTIS

ANL/NDM-104, . . *Some Thoughts on Positive Definiteness in the Consideration of Nuclear Data Covariance Matrices.*, . . Geraldo, L.P.; Smith, D.L., . . January 1988, . . NTIS, PC A04/MF A01; MF available from INIS.

BNL-NCS-51771, 1st Ed. Supp.4, . . *Integral Charged Particle Nuclear Data Bibliography, Literature Scanned from April 11, 1987 Through November 10, 1988.*, . . Holden, N.E.; Ramavataram, S., . . December 1988, . . NTIS

CONF-860605, pp.761-768, . . *Comparison of Calculated Integral Values Using Measured and Calculated Neutron Spectra for Fusion Neutronics Analyses.*, . . Sekimoto, H., . . In: Garner, F.A.; Henager, C.H.; Igata, N. Influence of Radiation on Material Properties: ASTM International Symposium (Part II). Held in Seattle, WA, 23-25 June 1986, . . 1987, . . Philadelphia, PA. ASTM

CONF-880417-19, . . *Design Analysis and Optimization of Self-Cooled Lithium Blankets and Shields.*, . . Gohar, Y., . . In: International Symposium on Nuclear Fusion Technology. Tokyo(Japan). 10-19 April 1988, . . February 1988, . . NTIS, PC A03/MF A01; MF available from INIS.

CONF-880546-19, . . *Neutron Sources: Present Practice and Future Potential.*, . . Cierjacks, S.; Smith, A.B., . . In: International Conference on Nuclear Data for Science and Technology. Mito(Japan). 30 May - 3 June 1988, . . 1988, . . NTIS, PC A02/MF A01; MF available from INIS.

CONF-890408, Vols.1 and 2, . . *American Nuclear Society Proceedings of a Topical Meeting on Advances in Nuclear Engineering Computation and Radiation Shielding.*, . . Hall, M.L.(Ed.), . . Held in Santa

Fe, New Mexico, April 9-13, 1989, . . April 1989, . . American Nuclear Society, Inc., 555 North Kensington Ave., LaGrange Park, IL 60525

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