

# RSIC Newsletter



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(For RSIC TELEX Communication Only)

No. 281

April 1988

*The world is divided into people who do things and people who get the credit. Try, if you can, to belong to the first class. There's far less competition.—Dwight Morrow*

## EPIC Organizational Changes

As **Betty F. Maskewitz** terminates all administrative duties and assumes the role of senior technical advisor, several changes have been put into place. All administrative duties within the Engineering Physics Information Centers (EPIC) are now my responsibility, and the following changes in duties are announced for other staff members.

**John E. White**, an EPIC staff member since 1981, assumes responsibility as Data Coordinator. The duties include selecting data libraries for inclusion in the RSIC collection, providing the Oak Ridge National Laboratory (ORNL) interface for ENDF/B, generating and maintaining the VITAMIN-E and data libraries derived therefrom, and other related activities.

**Jennifer L. Bartley**, also a staff member since 1981, is now serving as Packaging Coordinator. In this position, Jennie continues a major role in the testing of codes and data libraries and assures that the material comprising an RSIC package (tapelist, sample problem input and output, documentation, abstract, newsletter announcement) is as useful to potential users as is possible.

*Robert W. Roussin*, Director  
Engineering Physics Information Centers

## ICRS7 UPDATE

The Program Committee Meeting for the 7th International Conference on Radiation Shielding (ICRS7) was held in late February to select papers for oral and poster presentation. About 150 abstracts from 22 countries were received. Sixteen papers of general interest were selected for presentation in plenary sessions, and parallel oral sessions have been organized for the following topics:

- |                                       |                       |
|---------------------------------------|-----------------------|
| • Decommissioning and Decontamination | • Monte Carlo         |
| • Accelerators                        | • Methods             |
| • Experiments                         | • Shipping Casks      |
| • Power Reactors                      | • Radiation Streaming |
| • Sensitivity                         |                       |

Poster sessions organized around the oral sessions will be held on three afternoons.

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## CHANGES IN THE COMPUTER CODE COLLECTION

Six changes were made to the computer code collection. Four new code systems were packaged and added to the collection, an existing code package was extended with two additional hardware versions, and an existing code package was updated. Two changes were made as a result of foreign contributions.

### CCC-164/NAC

NAC, a neutron activation analysis and product isotope inventory code package, was updated to make the sample case output consistent with the data library, which was updated in April 1979 with new data for  $^{23}\text{Na}$  and  $^{58}\text{Fe}$ . Minor corrections were also made to the IBM source to enable it to run under the VS compiler. References: NASA TM X-52460 (1968). FORTRAN 66; IBM (A), CDC (B).

### CCC-322/S3

This kernel integration code system with multigroup gamma-ray scattering was extended with the addition of two new hardware versions. Duquesne Light Company, Shippingport, Pennsylvania, contributed a version which is operable on both VAX 11/750 and 8600 computers under VMS. Eagle Research Group, Inc., Arlington, Virginia, converted the code to run on microcomputers. This version has been tested on the Zenith Z100 and IBM PC/XT. References: LANL-5176 (June 1973) and informal notes. FORTRAN IV, CDC (A); FORTRAN 77, VAX (B) and Micro (C) (3 DS/DD diskettes required).

### CCC-527/LISA2

This code system, contributed by the Joint Research Centre, Ispra, Italy, is a useful tool for the analysis of the hazard due to the disposal of nuclear waste in geological formations. The risk linked to pre-established release scenarios is assessed by the code in terms of dose rate to a maximum exposed individual. The various submodels in the code simulate the system of both natural and man-made barriers, which are interposed between the contaminants and man. Reference: EUR 9306 EN and Technical Note 1.07.C2.85.56. FORTRAN 66; Amdahl 470.

### CCC-528 MICRO/MIRDOSE2

This code system for calculating internal dose estimates by the Medical Internal Radiation Dose (MIRD) scheme was contributed by Oak Ridge Associated Universities, Oak Ridge, Tennessee. The decay data are the most recently available in the Evaluated Nuclear Structure Data File (ENSDF). A pediatric phantom series is available in Version 2, which allows users to calculate radiation dose estimates for different age groups and to use the best available beta- and gamma-ray absorbed fractions for bone and marrow. An auxiliary routine, PLOT, performs curve fitting of user-entered bioretention data. The codes which run on IBM PC, PC/XT, PC/AT and compatibles are written in Microsoft BASIC. Reference: Informal documentation (1984 and 1988). BASIC; IBM PC. A single 5.25-in., DS/DD diskette is required to obtain the package.

### PSR-257/ACAT

A code system for the Monte Carlo simulation of atomic collision in amorphous targets using binary collision approximation was contributed by the Okayama University of Science, Okayama, Japan. ACAT employs the cell model in which a target atom is randomly selected at a simple cubic cell. ACAT calculates various phenomena such as sputtering, reflection, range distribution and damage distribution associated with atomic collisions in amorphous solids. Informal documentation. FORTRAN 77; Facom 380S and IBM 3033.

### PSR-262 MICRO/CASKCODES

This code system for shipping cask optimization, dose calculation, parameter evaluation, and shielding requirement determination was contributed by ORNL, Oak Ridge, Tennessee. Three

codes are included in this package. CAPSIZE runs interactively to determine the shielding requirements, size, and capacity of shipping casks subject to various proposed objectives. KWIKDOSE is a fast, new interactive shielding program to compute and display a 2-D table showing the total dose rate 10 feet from the centerline of a specific (user-defined) cask, as a function of the spent fuel burn-up and cooling time. SCOPE is a PC version of PSR-210/SCOPE. It is a conceptual design tool for the evaluation of various casks designed to carry

square fuel assemblies, circular canisters of nuclear waste material, or circular canisters containing intact spent-fuel assemblies. It may be used to evaluate a specific design or to search for the maximum number of fuel assemblies that might be shipped in a given type of cask. Either a single 5.25-inch DS/HD diskette or three DS/DD diskettes are required to obtain the package. Reference: ORNL/CSD/TM-248 (May 1987) and ORNL/CSD/TM-149 (January 1983). FORTRAN 77; IBM PC.

### IEEE Seeks Nominees for NSREC Award

The International Electrical and Electronics Engineers (IEEE) Nuclear and Plasma Sciences Society is seeking nominations for the Nuclear and Space Radiation Effects Conference (NSREC) Annual Radiation Effects Award to be presented in July 1988. The award recognizes members of the radiation effects technical community "who have demonstrated outstanding and innovative technical contributions or leadership."

The recipient of the award is selected for one of two categories:

- outstanding and innovative technical contributions which are widely referenced and have had major impact in the radiation effects

- community, and outstanding and innovative technical leadership in or service to the radiation effects community.

Nominations are solicited via direct mailing of nomination forms to NSREC attendees, distribution of announcements and nomination forms at the NSREC, and requests in the NPSS newsletter. Individuals may be nominated by sending the official nomination form and ten copies to the Radiation Effects Committee Senior Member-at-Large, Ronald L. Pease, Mission Research Corp., 1720 Randolph Road SE, Albuquerque, NM 87106 (phone 505-768-7600), by **May 1, 1988**.

### ICRU Seeks Nominees for Gray Medal

The International Commission on Radiation Units and Measurements (ICRU) is seeking nominations for the sixth award of the *ICRU Gray Medal*. The Gray Medal, established in 1967 to honor former member and Vice-Chairman of the Commission Louis Harold Gray, is awarded every four years for outstanding contributions in the scientific fields of interest to the ICRU.

Nominations must include a complete biographical sketch (*curriculum vitae*) of the nominee, reprints or any scientific record which show the significant contributions made by the nominee, and the proponent's personal evaluation of the importance of the contributions. Nominations should be directed to the Chairman of the ICRU, Suite 1016, 7910 Woodmont Ave., Bethesda, MD 20814 USA, and received no later than **July 1, 1988**.

Former recipients of the award are:

*Lewis V. Spencer*, 1969, for work on the theory of charged particle penetration,

*John W. Boag*, 1973, for work on the theory of recombination taking place in ionization chambers,

*Mortimer M. Elkind*, 1977, for his work leading to the identification of repair in cells,

*Maurice Tubiana*, 1981, for his work on the use of radioactive isotopes and high energy radiation in medicine, and

*Harald H. Rossi*, 1985, for his pioneering work in radiobiology and radiation chemistry.

The sixth award will be made at the XVIIth International Congress of Radiology in 1989.

## 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.

**T. Y. Lee** has joined the RSIC staff on a guest assignment from the Health Physics Division of the Korean Advanced Energy Research Institute, Daeduk-Danji, Chungnam, Korea. Mr. Lee is working on projects in reactor shielding, reactor cavity streaming, and in the use of discrete ordinates and Monte Carlo radiation transport codes.

**Mafizur Rahman**, from Chittagong, Bangladesh, joined the RSIC staff as an IAEA Fellowship student for six months of training at ORNL. Mr. Rahman will be assigned a project in the field of nuclear power reactor shielding with emphasis on the processing of multigroup cross section data from the ENDF/B format. Following his guest assignment at ORNL, Rahman will spend six months at Oregon State University. Mr. Rahman is a Senior Scientific Officer with the Bangladesh Atomic Energy Commission at the Institute of Nuclear Science and Technology in Dhaka.

**Dan G. Cacuci**, Section Head of the Systems Analysis and Shielding Group of the Engineering Physics and Mathematics Division of ORNL, has accepted a professorship in the Chemical and Nuclear Engineering Department at the University of California at Santa Barbara, effective April 1, 1988.

**Margaret B. Emmett** has been named head of the Nuclear Code Development Section in the Nuclear Engineering Applications Department at ORNL.

**E. Thomas Boulette** was named plant manager of Maine Yankee. He has been with Maine Yankee since

1983 and has served as assistant plant manager and director of operational support.

**Jean Gonnord**, an active RSIC participant in the past, is now head of the Mechanical Robotics and Simulation Laboratory of the Institute of Research Technology and Industrial Development. His present address is CEN/SAC DEMP/SYST/MRS, Bat 470, 911191 Gif-sur-Yvette Cedex, France.

## Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *George Killough*, Hendecagon Corp., Oak Ridge, Tenn., *Jeff Goodman*, Impell Corp., Knoxville, Tenn., *Pat McDaniel*, Sandia National Laboratories, Albuquerque, N. M., and *Denis E. Beller*, Maj., USAF, *Joseph Bouchard*, Capt, USAF, *Bruce Lindblom*, Capt, USAF, *Kevin M. Kittner*, Capt., USAF, *Michael G. Archuleta*, Capt., USAF, *Donald Robbins*, 1Lt, USAF, *Robert A. LeMire*, 1Lt, USAF, *Vaughn H. Standley*, 2Lt, USAF, *Bryan M. Minor*, 2Lt, USAF, *Russell B. Daniel*, Capt, USMC, and *Fletcher Whitworth, Jr.*, Capt., USA, Air Force Inst. of Technology, Wright Patterson Air Force Base, Ohio.

## Standards Activity

The following newly-published standard is available from the International Electrotechnical Committee, 1, rue de Varembe, 1211 Geneva 20, Switzerland, or in the United States from ANSI, Attn: International Sales Dept., 1430 Broadway, New York, NY 10018.

IEC 861:1987, *Equipment for Continuously Monitoring Beta and Gamma Emitting Radionuclides in Liquid Effluents*.

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## 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.

### Calls for Papers

#### Model Conference

The fourth annual *DOE Model Conference*, to be held October 3-7, 1988, in Oak Ridge, Tennessee, has issued a call for technical papers and posters on all aspects of radioactive, hazardous, and mixed waste management. Suggested topics include: Waste Reduction; Characterization and Certification; Waste Treatment and Disposal Technologies; Decontamination and Decommissioning; Site Remediation; Regulations and Standards; Training; Contingency Planning and Emergency Response; Risk Assessment and Management; Hazard Assessment and Monitoring; and Associated Topics (Socioeconomic Issues, Groundwater Protection Strategies, Air Pollution Control, Environmental Data Management, Environmental Auditing, Transportation, and Quality Assurance).

The deadline for submission of an original and two copies of an abstract is **April 29, 1988**. Abstracts should be submitted to Cynthia Kendrick, ORNL, P.O. Box X, Oak Ridge, TN 37831-6029. Questions about the submission of abstracts may be directed to Cynthia Kendrick at 615-576-2632 or FTS 626-2632.

#### Advances in Nuclear Engineering Computation and Radiation Shielding

This biennial topical meeting sponsored by the American Nuclear Society (ANS) Mathematics & Computation (M&C) Division, the Radiation Protection and Shielding (RP&S) Division, and the New Mexico Trinity Section has issued the call for papers for the April 9-13, 1989, meeting in Sante Fe, New Mexico. Particular emphasis will be given to radiation shielding methods and applications in the following areas: Deterministic neutral & charged particle transport methods and applications, Monte Carlo neutral & charged particle transport methods and applications, Computational thermal radiation transport methods, Diffusion theory and

kinetics, Radiation shielding design and analysis, Computational fluid dynamics and thermal hydraulics, Evaluated and processed nuclear data for shielding applications, Radiation protection management, Innovative applications of advanced computers and architecture, and On-line reactor simulation.

A poster session on computer codes, computational benchmark solutions, and shielding applications and a student paper competition are planned. Summaries of 800-1200 words should be submitted to E. W. Larsen, Technical Program Chairman, c/o Group X-6, MS B226, Los Alamos National Laboratory (LANL), Los Alamos, NM 87545 U.S.A., by the deadline of **August 15, 1988**. Inquiries may be made by telephone to E. W. Larsen, Technical Program Chairman (313-936-0124), or to William T. Urban, Assistant Technical Program Chairman (505-667-4024).

#### Harvard School of Public Health Offers Radiation Protection and Safety Courses

The Harvard School of Public Health is offering several one-week courses in radiation protection and nuclear emergency planning. A brief description of each course follows. Detailed information about course content and fees may be obtained from the Harvard School of Public Health, Office of Continuing Education, Dept. A, 677 Huntington Ave., L-23, Boston, MA 02115 (phone 617-732-1171).

**Radiation Protection Instrumentation**, May 9-13, 1988, is directed to radiation protection personnel in the public and private workplace. The program covers the fundamentals of radiation protection instrumentation; measurement of external radiation and surface contamination; assessment of airborne radionuclides, including radon and its decay products, noble gases, and radioiodine; procedures for selection and evaluation of continuous air and portal monitors; multichannel analyses and whole body counting; instrumentation for low-level environmental measurements; quality control in instrument manufacture; and human factors.

**Environmental Radiation Surveillance**, June 20-24, 1988, will provide a comprehensive review of the basic principles and practices and new developments in environmental radiation surveillance. Topics will include internal and external radiation standards; limits for releases below regulatory concern; biological effects and epidemiological studies; environmental transport models; measurements of environmental radiation; data interpretation and quality assurance; and designing a surveillance program.

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**Planning for Nuclear Emergencies**, June 13-17, 1988, will provide detailed coverage of the major aspects of nuclear emergency planning, including accident source terms and dose estimates; standards and guides for emergency response; training programs and notification systems; and preparedness for meeting public health needs.

**Advanced Workshop on Nuclear Emergency Planning**, July 11-15, 1988, is designed for experienced personnel in nuclear emergency planning. The workshop will cover the organization and execution of emergency exercises, including development; the technological aspects of emergency response, including associated instrumentation requirements; the management of emergency preparedness and response, with emphasis on interactions among federal, state, and local agencies; related sociological and educational issues, including a special session on working with the news media; and sabotage and terrorism.

### Calendar

Your attention is directed to the following events of interest.

#### May 1988

*Safety of Next Generation Power Reactors*, May 1-6, 1988, Seattle, Washington, sponsored by the ANS Reactor Physics, Reactor Operations, Human Factors, and Fuel Cycle and Waste Management Divisions, and the U.S. DOE. Contact: Robert Ferguson, Ferguson & Assoc., 7601 W. Clearwater, Suite 450, Kennewick, WA 99336 (phone 509-783-1446).

*3rd Topical Meeting on Tritium Technology in Fission, Fusion, and Isotopic Applications*, May 1-6, 1988, Toronto, Canada, sponsored by the Canadian Nuclear Society and the ANS. Contact: C. D. Burnham, CFFTP, 2700 Lakeshore Road, West, Mississauga, Ontario, Canada, L5J 1X3 (phone 416-823-6364) or Harold Anderson, Monsanto Research Corp., P.O. Box 32, Miamisburg, OH 45342 (phone 513-865-3062).

*International Conference on Incineration of Hazardous and Radioactive Waste*, May 3-6, 1988, San Francisco, sponsored by the ANS. Contact: Jim Tripodes, Univ. of California, EG&S Trailer Complex 407, Irvine, CA 92717 USA (phone 714-856-6200).

*International Symposium on the Feedback of Operational Safety Experience from Nuclear Power Plants*, May 16-20, 1988, Paris, sponsored by the IAEA. Contact: IAEA, Conference Service Section, P.O. Box 100, A-1400 Vienna, Austria.

*International Symposium on the Management of Low and Intermediate Level Radioactive Wastes*, May 16-20, 1988, Stockholm, Sweden, sponsored by the International Atomic Energy Agency (IAEA). Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

*NATO Advanced Workshop on "Noise and Nonlinear Phenomena in Nuclear Systems"*, May 23-27, 1988, Valencia, Spain. Contact: Felix C. Difilippo, ORNL, P.O. Box X, Oak Ridge, TN 37831-6363 USA (phone 615-574-6188) or Jose L. Muñoz-Cobo, Departamento de Ingeniería Química y Nuclear, Universidad Politécnica de Valencia, Apdo. 22012, 46071 Valencia, Spain (phone 361-5051).

*Workshop on Biological Assessment of Occupational Exposure to Actinides*, May 30-June 2, 1988, Versailles, France, sponsored by the U.S. Dept. of Energy and the Commission of the European Communities. Contact: G. B. Gerber, Commission of the European Communities, DG XII/F/1, Rue de la Loi 20, B-1049 Brussels, Belgium (phone 0-2-2354041).

*International Conference on Nuclear Data for Science and Technology*, May 30-June 3, 1988, Mito, Japan, sponsored by the Japan Atomic Energy Research Institute. Contact: Sin-iti Igarasi, Conference Secretariat, Nuclear Data Center, JAERI, Tokai-mura, Naka-gun, Ibaraki-ken 319-11 Japan (phone 0292-82-5480).

#### June 1988

*International Conference on Computational Physics (ICCP)*, June 1-5, 1988, Beijing, sponsored by the Institute of Applied Physics and Mathematics, Beijing, and Drexel University, Pennsylvania. Contact: Zhang Tianyuan, IAPCM, P.O. Box 8009, Beijing, China (PRC) or D. H. Feng, Department of Physics and Atmospheric Science, Drexel University, Philadelphia, PA 19104 USA.

*American Nuclear Society Annual Meeting*, June 12-17, 1988, San Diego, California. Contact: ANS, Meetings Dept., 555 North Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

*35th Annual Meeting of the Society of Nuclear Medicine*, June 14-17, 1988, San Francisco. Contact: Society of Nuclear Medicine, 136 Madison Ave., 8th Floor, New York, NY 10016 (phone 212-889-0717).

#### July 1988

*33rd Annual Meeting of the Health Physics Society*, July 4-8, 1988, Boston. Contact: Health Physics Society, Suite 506, 1340 Old Chain Bridge Road, McLean, VA 22101 (phone 703-790-1745).

*25th Annual Conference on Nuclear and Space Radiation Effects*, July 12–15, 1988, Portland, Oregon, sponsored by the Inst. of Electrical and Electronics Engineers. Contact: IEEE, 345 E. 47th St., New York, NY 10017 (phone 212-705-7895).

#### August 1988

*International Reprocessing and Waste Management Symposium*, Aug. 21–24, 1988, Denver, Colorado, sponsored by the American Inst. of Chemical Engineers. Contact: Wayne Freeby, Bechtel National, Inc., Fifty Beale St., San Francisco, CA 94119.

#### September 1988

*Industrial Radiation and Radioisotope Measurement Applications*, Sept. 6–8, 1988, Pinehurst, North Carolina, a topical meeting sponsored by the Isotopes and Radiation Division of the ANS. Contact: Robin P. Gardner, General Chairman, or Kuruvilla Verghese, Tech. Program Chairman, North Carolina State Univ., School of Engineering, Box 7909, Raleigh, NC 27695-7909.

*International Topical Meeting on Waste Management*, Sept. 11–15, 1988, Pasco, Washington. Contact: Bill Bonner, Pacific Northwest Laboratory, P.O. Box 999, Richland, WA 99352 (phone 509-376-5451 or FTS 444-5451).

*7th International Conference on Radiation Shielding (ICRS)*, Sept. 12–16, 1988, Bournemouth, United Kingdom, sponsored by the OECD Nuclear Energy Agency and the UK Atomic Energy Agency. Contact: A. K. McCracken, UKAEA Winfrith, Dorchester, Dorset, DT2 8DH, UK or Leo LeSage, Argonne National Laboratory (ANL), Argonne, IL 60439 (phone 312-972-6048).

*International Reactor Physics Conference*, Sept. 18–21, 1988, Jackson Hole, Wyoming, sponsored by the ANS. Contact: Mike Lineberry, ANL, P.O. Box 2528, Idaho Falls, ID 83403 (phone 208-526-7434).

*11th International CODATA Conference, "Scientific and Technical Data in a New Era,"* Sept. 26–29, 1988, Karlsruhe, Fed. Rep. of Germany. Contact: DECHEMA, ATTN: CODATA Conference, P.O. Box 97 01 46, D-6000 Frankfurt/M. 97, Fed. Rep. of Germany (phone 069 7564 241/242/243; Telex: 412490 dcha d.).

#### October 1988

*4th International Symposium on Radiation Physics (ISRP-4)*, Oct. 3–7, 1988, São Paulo, Brazil.

Contact: Prof. Ivan Cunha Nascimento, ISRP-4 Chairman of the Organizing Committee, Inst. de Física-Universidade de São Paulo, Caixa Postal 20516 (TELEX: 011-37920 IF SP -1498-São Paulo-SP-Brazil).

*Fundamentals of Nondestructive Assay of Nuclear Material*, Oct. 3–7, 1988, Los Alamos, New Mexico, sponsored by the U.S. Dept. of Energy. Contact: Linda Robinson, LANL, Los Alamos, NM 87545 (phone 505-667-5258 or FTS 843-5258).

*International Symposium on the Feedback of Operational Safety Experience from Nuclear Power Plants*, Oct. 3–7, 1988, Vienna, sponsored by the IAEA. Contact: IAEA, Conference Service Section, P.O. Box 100, A-1400 Vienna, Austria.

*8th Topical Meeting on Technology of Fusion Energy*, Oct. 9–13, 1988, Salt Lake City, Utah. Contact: Clyde R. Toole, EG&G Idaho, P.O. Box 1625 (WCB-W3), Idaho Falls, ID 83415.

*IMEchE International Conference on Decommissioning of Major Radioactive Facilities*, Oct. 11–12, 1988, London, sponsored by the Institution of Mechanical Engineers. Contact: Conference Dept. C376, Inst. of Mechanical Engineers, 1 Birdcage Walk, Westminster, London SW1H 9JJ, United Kingdom.

*12th International Conference on Plasma Physics and Controlled Nuclear Fusion Research*, Oct. 12–19, 1988, Nice, France, sponsored by the IAEA. Contact: IAEA, P.O. Box 100 A-1400, Vienna, Austria.

*5th National Conference on Biomedical Physics and Engineering*, Oct. 15–17, 1988, Sofia, Bulgaria. Contact: M. Markov, Department of Biophysics, Biological Faculty, Sofia University, 8, Dragan Tzankov Blvd., Sofia 1000, Bulgaria.

*Meeting of the American Nuclear Society*, Oct. 30–Nov. 4, 1988, Washington, D.C. Contact: ANS, Meetings Department, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

*2nd Conference on Radiation Protection and Dosimetry*, Oct. 31–Nov. 3, 1988, Orlando, Florida, sponsored by ORNL. Contact: C. S. Sims, ORNL, P.O. Box X, Oak Ridge, TN 37831-6379.

#### November 1988

*Gamma-Ray Assay of Nuclear Materials*, Nov. 28–Dec. 2, 1988, Los Alamos, New Mexico, sponsored by the U.S. Dept. of Energy. Contact: Linda Robinson, LANL, Los Alamos, NM 87545 (phone 505-667-5258 or FTS 843-5258).

## MARCH 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

**CONF-870163**, . . . *Mechanisms of Radiation Interaction with DNA: Potential Implications for Radiation Protection*, . . . Wood, R.W. (Comp.), . . . DOE/CEC Workshop, held January 21-22, 1987 at the University of California, San Diego, La Jolla, CA, . . . January 1988, . . . NTIS, PC A09/MF A01

**DOE/RW-0006, Rev.3**, . . . *Integrated Data Base for 1987: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, . . . Oak Ridge National Laboratory, . . . September 1987, . . . NTIS, PC 14/MF A01

**INDC(NDS)-191/GAP**, . . . *Progress in Fission Product Nuclear Data. Information About Activities and Requirements in the Field of Measurements and Compilations/Evaluations of Fission Product Nuclear Data (FPND)*, . . . Lammer, M. (Comp.), . . . January 1988, . . . IAEA Nuclear Data Section, Wagramerstrasse 5, A-1400 Vienna

**K-2057, Rev.1**, . . . *Renovation of DOT Specification 21PF-1 Protective Shipping Packages*, . . . Barlow, C.R.; Ziehlke, K.T.; Pryor, W.A.; Householder, W.R., . . . November 1986, . . . NTIS, PC A02/MF A01

**LA-11133-MS**, . . . *Comparison of Calculated and Measured Response Functions for Germanium Detectors*, . . . Streetman, J.R.; Moss, C.E., . . . November 1987, . . . NTIS

**LA-11167**, . . . *Determining Zirconium in Uranium by X-Ray Fluorescence*, . . . Martell, C.J.; Hansel, J.M., . . . December 1987, . . . NTIS

**LA-11172-MS**, . . . *Where Directed Energy Stands in Strategic Defense*, . . . Canavan, G.H.; Browne, J.C., . . . January 1988, . . . NTIS

**LBL-21121**, . . . *Radionuclide Migration Through Fractured Rock: Effects of Multiple Fractures and Two-Member Decay Chains*, . . . Ahn, J.; Chambre, P.L.; Pigford, T.H., . . . September 1985, . . . NTIS

**LBL-23425**, . . . *Radionuclide Dispersion from Multiple Patch Sources into a Rock Fracture*, . . . Ahn, J.; Chambre, P.L.; Pigford, T.H., . . . September 1986, . . . NTIS

**LBL-23987**, . . . *Transport of Radioactive Decay Chains in Finite and Semi-Infinite Porous Media*, . . . Lung, H.-C.; Chambre, P.L.; Pigford, T.H., . . . September 1987, . . . NTIS

**LBL-24173**, . . . *BEIR IV Report: The Effects on Populations of Exposure to Internally Deposited Alpha-Emitting Radionuclides: 1987. Health Risk of Radon and Other Internally Deposited Alpha-Emitters*, . . . Fabrikant, J.I., . . . September 1987, . . . NTIS

**NUREG/CR-4786**, . . . *Transport Behavior of Iodine in Effluent Radioactivity Monitoring Systems*, . . . Edson, J.L.; Duce, S.W.; Tkachyk, J.W., . . . September 1987, . . . NRC; GPO; NTIS

**NUREG/CR-5049; ORNL/TM-10651**, . . . *Pressure Vessel Fluence Analysis and Neutron Dosimetry*, . . . Kam, F.B.K.; Maerker, R.E.; Williams, M.L.; Stallman, F.W., . . . December 1987, . . . GPO; NTIS

**NUREG/CR-5063**, . . . *Development of a Mechanistic Understanding of Radiation Embrittlement in Reactor Pressure Vessel Steels. Final Report*, . . . Ebrahimi, F.; Hoelzer, D.T.; Venables, D., . . . January 1988, . . . NRC; GPO; NTIS

**ORNL-6268**, . . . *The TORT Three-Dimensional Discrete Ordinates Neutron/Photon Transport Code*, . . . Rhoades, W.A.; Childs, R.L., . . . November 1987, . . . NTIS

**ORNL-6430**, . . . *Microstructural Evolution in Fast-Neutron-Irradiated Austenitic Stainless Steels*, . . . Stoller, R.E., . . . December 1987, . . . NTIS, PC A17/MF A01

**ORNL/CSD/TM-244**, . . . *Reactivity and Isotopic Composition of Spent PWR Fuel as a Function of Initial Enrichment, Burnup, and Cooling Time*, . . . Cerne, S.P.; Hermann, O.W.; Westfall, R.M., . . . October 1987, . . . NTIS, PC A05/MF A01



**ORNL/Sub-87-00421/1**, . . *Cask Fleet Operations Study*, . . Nuclear Assurance Corp., Norcross, GA, . . January 1988, . . NTIS, PC A14/MF A01

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