

RSIC Newsletter



Oak Ridge National Laboratory
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Phone No. 615-574-6176 or FTS 624-6176
EasyLink Mailbox: 62813374
Telex (Answer Back): 854467 (ORNL EPIC UD)
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January 1990

You can't escape the responsibility of tomorrow by evading it today.—Abraham Lincoln

7th PBNC Technical Programs

The technical program planned for the 7th Pacific Basin Nuclear Conference (PBNC) to be held March 4–8, 1990, in San Diego, was developed around its theme, "The Nuclear Technology Challenge for the 1990s." Expert speakers from both sides of the Pacific (and the Atlantic) will cover the current status and future of nuclear advancement, both in technology and in public and regional acceptance and cooperation. All the planned sessions cannot be covered here, but a sampling follows. The opening session on Monday, March 5, begins with an overview of the status of nuclear technology in the Pacific Basin which includes Korea, China, Mexico, Taiwan, Canada, the U.S. and others. Betty F. Maskewitz, RSIC advisor, and Kun-Mo Chung, Korea Sci. & Eng., will co-chair

Regional Cooperation and Public Concerns. (RSIC has historically taken the lead in promoting cooperation in the exchange of technical information in the scientific community.) *Processing, Storage, Transportation and Disposal of Radioactive Waste* will be of interest to RSIC's user community of radiation protection, transport, shielding, and waste disposal specialists. *Contributions to Nuclear Technology in Agriculture, Medicine and Industry* provides a forum for the discussion of the development and practical application of nuclear technology.

In addition to the technical program several special events and technical tours have been arranged for the enrichment of meeting participants and attendees.

THANK YOU

The RSIC staff would like to thank our friends in the radiation protection, shielding, and transport community for the greetings and cards sent

during December and which continue to arrive. Your messages are prominently displayed on a bulletin board and colleagues in other work areas pause to survey our collection.

IF YOU CHANGE YOUR ADDRESS, please notify us (including Building and Room No. where needed). *Third Class Mail* is returned to us at our expense if the addressee has moved. If your mail is returned, your name will be deleted from our distributions until we hear from you.

CHANGES TO THE COMPUTER CODE COLLECTION

Three changes were made to the code collection during the month. One new code system was packaged and added to the collection, an existing code package was extended with an additional hardware version, and one existing code package was updated. One change resulted from a foreign contribution.

CCC-536/DOSFACTER-DOE

The Royal Observatory of Hong Kong, Kowloon, contributed modifications required to implement this code on the Data General MV20000. The information is available upon request. DOSFACTER-DOE, developed at Oak Ridge National Laboratory (ORNL), calculates dose rate conversion factors for external exposure to photons and electrons emitted by radionuclides in the environment. The results give the dose-equivalent rate per unit concentration for a particular mode of exposure: immersion in a contaminated atmospheric cloud, immersion in contaminated water, or exposure to contaminated ground surface. The code is available on one DS/DD diskette. Reference: DOE/EH-0070 (July 1988). FORTRAN IV; IBM 3033 and Data General MV20000.

CCC-543/TORT

Oak Ridge National Laboratory under Defense Nuclear Agency (DNA) sponsorship developed this three-dimensional discrete ordinates transport code system. Based on the earlier ORNL two-dimensional codes, TORT calculates the flux or fluence of particles throughout two- or three-dimensional geometric systems due to particles incident upon the system from extraneous sources or generated internally as a result of interaction with the system. The principle application is deep-penetration transport of neutrons and photons. Certain reactor eigenvalue problems can also be solved. The Boltzmann transport equation is solved using the discrete ordinates method to treat the directional variable and finite-difference methods to treat spatial variables. Energy dependence is treated using a multigroup formulation. Time dependence is not treated. On Cray systems, TORT can operate in a 100% FORTRAN configuration, using calls to the system subroutine libraries for necessary system facilities such as I/O.

Optional assembler-language routines enhance performance if desired. Cray CFT 1.14, CFT 1.15, or CFT77 Version 3.0 compilers can be used with TORT. The FORTRAN 77 language standard is followed closely, with the exception of traditional Hollerith data as described in the CFT77 document. The standard library distributed with the Cray UNICOS Version 5.0 was used to execute the sample cases included on the distribution tape. Several related programs are included in the package: DORT, the DOS driver, GIP (a cross-section file preparation code), and GRTUNCL (produces uncollided flux file). The TORT source file is available in update form, including comment files and documentation updates, implementation instructions, and description of sample problem cases. References: ORNL-6268 (November 1987) and ORNL-5851 (July 1982). FORTRAN and CAL, CRAY.

PSR-171/NJOY89

The developers at Los Alamos National Laboratory (LANL), New Mexico, provided updates to this code system for producing pointwise and multigroup neutron and photon cross sections from ENDF/B evaluated nuclear data. The update directives, added to the package as a separate file, can be used to create NJOY89 version 31 from the NJOY89.0 source. Common block modifications and some machine-dependent changes are included. The changes are available on one DS/DD (360Kb) diskette. The modules provided in PSR-171 are the NJOY driver program, RECONR, BROADR, UNRESR, HEATR, THERMR, GROUPE, GAMINR, ERRORR, COVR, MODER, DTFR, CCCR, MATXS, ACER, and PLOTR. The machine-independent UPDATE emulator developed at Sandia National Laboratories (SNL) and packaged in RSIC as PSR-245/UPEML was used for the IBM implementation and is suggested for general use with NJOY89. PSR-171/NJOY89 requesters will also receive UPEML. References: LANL Memo T-2-L-10991 (June 1987), LA-9303-M (ENDF-324), Vol. I (May 1982), Vol. II (May 1982), Vol. III (October 1987), Vol. IV (December 1985), and Informal Notes (July 1989). FORTRAN 77; CDC, CRAY, IBM, VAX.

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.

RSIC has been informed of the death of **Shlomo Katz**. The news was forwarded by Jean Claude Nimal, DMT/SERMA/LEPP, C.E.N. Saclay, France.

Dr. William J. Viegele, whose x-ray cross section work was used as a DNA standard and in the early ENDF cross section set, is now a radiation effects consultant and a Visiting Professor of Physics and Lecturer in Nuclear Engineering at the University of California,

Santa Barbara.

RSIC has been advised that the **Shanghai Nuclear Engineering Research and Design Institute** has moved to a new location at 29, Hong Cao Road. The mailing address is P.O. Box 233-008, 200233 Shanghai, People's Republic of China.

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Monique Legroux*, OECD, Paris, France; *Steve Dupree* and *Thomas W. Laub*, Sandia National Laboratories, Albuquerque, N. M.; *Rick Emmett*, H&R Associates, Oak Ridge, Tenn.; and *Ivon Fergus*, and *John Rommel*, Bechtel National, Inc., Middletown, Penn.

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.

UT Conference Center Opens

The opening of the new University of Tennessee-Knoxville Conference Center is scheduled for this month. The facilities are designed to provide a relaxed, businesslike atmosphere to support adult learning in both small and large groups. An experienced staff will be available to provide audio-visual assistance as well as video and teleconferencing services. Further information about the use of the conference facilities may be obtained from UT Conferences, P.O. Box 2648, Knoxville, TN 37901 (phone 615-974-0250).

Hanford FFTF Observes 10th Anniversary

A cluster of special sessions has been planned for the November 1990 ANS Meeting in Washington, D.C. in observance of the 10th anniversary of the Hanford Fast Flux Test Facility (FFTF) to focus attention on Liquid Metal Reactor (LMR) technology. These sessions will review the past decade of progress in LMR technology and the promise it provides for the next generation of commercial electrical power stations. The Radiation Protection and Shielding Division of the ANS will sponsor a shielding session entitled, "LMR Shielding—Past, Present, and Future." Other ANS Divisions that have agreed to sponsor sessions are Fuel Cycle and Waste Management, Isotopes and Radiation, Materials Science and Technology, Nuclear Reactor Safety, Reactor Operations, Reactor Physics, and Remote Systems. Though traditional summaries will be published in the *ANS Transactions*, full papers will be requested for publication in a form which will provide a comprehensive summary of LMR technology. Further information may be obtained from Dr. Lee Carter, Westinghouse-Hanford Co., HO-35, P.O. Box 1970, Richland, WA 99352 (phone 509-376-3929 or FTS 444-3929).

Calendar

Your attention is directed to the following events of interest.

February 1990

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

WATtec '90 Technical Conference and Exhibition, Feb. 20-23, 1990, Knoxville, Tennessee. Contact: WATtec. P.O. Box 629, Oak Ridge, TN 37831-0629.

Waste Management '90, Feb. 25-Mar. 1, 1990, Tucson, Arizona, sponsored by the University of Arizona and the American Nuclear Society. Contact: Dr. Morton E. Wacks, Dept. NEE, University of Arizona, Tucson, AZ 85721 (phone 602-621-6160).

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).

Radioactive Material Transportation Basic Workshop, Mar. 12-15, 1990, Oak Ridge, Tenn., sponsored by the U.S. Dept. of Energy. Contact: Teresa Yearwood, Science Applications International Corp., P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031).

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

Workshop on Statistics of Human Exposure to Ionizing Radiation, Apr. 2-4, 1990, Oxford, U.K., sponsored by the CEC, the U.S. Dept. of Energy, and the Atomic Energy Control Board. Contact: Dr. J. Sinnaeve, CEC, DG XII/D/3, Rue de la Loi 200, B-1049 Brussels, Belgium, or M. C. O'Riordan, Chilton, Didcot, Oxon OX11 0RQ, UK.

26th Annual Meeting of the National Council on Radiation Protection and Measurement, Health and Ecological Implications of Radioactively Contaminated Sites, Apr. 4-5, 1990, Washington, D.C. Contact: NCRP, 7910 Woodmont Ave., Suite 800, Bethesda, MD 20814.

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).

3rd International Seminar on Finite Element and Allied Methods in Radiation Transport, Shielding, Reactor Physics and Geophysics Applications, Apr. 19-20, 1990, at the Imperial College of Science,

Technology, and Medicine, in London. Contact: Prof. A.J.H. Goddard, Nuclear Power Section, Mechanical Engineering Department, Imperial College, London, SW7 2BX, U.K. (phone 01-589 5111 Ext. 6248/9, Fax 1 823 8845).

Radioactive Material Transportation Basic Workshop, Apr. 23-26, 1990, Albuquerque, N. M., sponsored by the U.S. Dept. of Energy. Contact: Teresa Yearwood, Science Applications International Corp., P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031).

Physor '90, Apr. 23-26, 1990, Marseille, France. Contact: Yuri Orechwa, Engineering Physics Division, Bldg. 208, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439 USA.

Respiratory Protection at Nuclear Facilities, a course offered Apr. 23-27, 1990, in Atlanta. Contact: Radiation Safety Assoc., Inc., P.O. Box 107, Hebron, CT 06248 (phone 203-228-0487).

May 1990

Radioactive Material Transportation Basic Workshop, May 7-10, 1990, Chicago, Ill., sponsored by the U.S. Dept. of Energy. Contact: Teresa Yearwood, Science Applications International Corp., P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031).

International Symposium on Radiation Protection Infrastructure, May 7-11, 1990, Munich, Fed. Rep. of Germany, sponsored by the IAEA. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400, Vienna, Austria.

7th Symposium on Radiation Measurements and Applications, May 21-24, 1990, the University of Michigan, Ann Arbor. Contact: Helen Lum, Symposium Secretary, 3034 Phoenix Memorial Laboratory, The University of Michigan, Ann Arbor, MI 48109-2100 (phone 313-764-6214; Fax 313-763-4540).

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).

15th Symposium on Effects of Radiation on Materials, June 17-21, 1990, Nashville, Tennessee, sponsored by the American Society for Testing and Materials. Contact: Conferences, ASTM, 1916 Race St., Philadelphia, PA 19103 (phone 215-299-5400).

17th European Conference on Controlled Fusion and Plasma Heating, June 25-29, 1990, Amsterdam,

The Netherlands. Contact: F. C. Schuller, FOM-Instituut voor Plasmafysica "Rijhuizen," Postbus 1207, NL-3430 BE Nieuwegein.

July 1990

3rd International Workshop on Respiratory Tract Dosimetry, July 1-3, 1990, Albuquerque, N. M., sponsored by the U.S. Dept. of Energy, CEC, and the Inhalation Toxicology Research Institute. Contact: Raymond A. Guilmette, Workshop Co-chairman, Inhalation Toxicology Research Inst., P.O. Box 5890, Albuquerque, NM 87185 (phone 505-844-5835).

5ièmes Journées d'Etudes sur la Chimie sous Rayonnement, July 1-6, 1990, Sherbrooke, Québec. Contact: Jean-Paul Jay-Gerin, JECR-90, Département de médecine nucléaire et de radiobiologie, Faculté de médecine, Univ. de Sherbrooke, Sherbrooke, Québec, Canada J1H 5N4 (phone 819-563-5555, ext. 4682, Fax 819-564-5445; Bitnet S015@UDESVM). The conference language is French.

27th Annual International Nuclear and Space Radiation Effects Conference and Short Course, July 16-20, 1990, Reno, Nevada, sponsored by the Institute of Electrical and Electronics Engineers, Inc. Contact: Joseph R. Srouf, Northrop Corp., M.S. X400/N5, 2301 West 120th St., P.O. Box 5032, Hawthorne, CA 90251-5032 (phone 213-600-4151).

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 208-526-1252).

7th ASTM-EURATOM Symposium on Reactor Dosimetry, Aug. 27-31, 1990, Strasbourg, France. Contact: G. Tsotridis, Joint Research Centre, Petten Establishment, HFR Div., Postbus 2, NL-1755 ZG, Petten, The Netherlands (phone 02246 5122, Telex REACP NL 57211, Fax 02246 1449) or G. P. Lamaze, National Inst. of Standards and Technology, Bldg. 235, Gaithersburg, MD 20899 USA (phone 301-975-6202, Telex 197 674 NBS UT, Fax 301-921-9847).

September 1990

16th Symposium on Fusion Technology, Sept. 3-7, 1990, London. Contact: JET Joint Undertaking,

Conference Office, Abingdon, Oxon, OX14 3EA, United Kingdom.

Radioactive Materials Transportation Basic Workshop, Kennewick, Washington. Contact: Teresa Yearwood, SAIC, P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031).

ENC'90, The World Conference and Exhibition, Looking Into Nuclear's Future in the 21st Century, Sept. 23-28, 1990, Geneva, Switzerland, organized by the European Nuclear Society in collaboration with the American Nuclear Society and the European Atomic Forum, Foratom. Contact: ENC '90 Secretariat, c/o ENS, P.O. Box 5032, CH-3001 Berne, Switzerland.

Symposium on Recent Advances in Multidisciplinary Analysis and Optimization, Sept. 24-26, 1990, San Francisco, sponsored by the U.S. Air Force and NASA. Contact: V. B. Venkayya, WRDC/FIBRA, WPAFB, OH 45433-6553 (phone 513-255-7191 or 513-255-6992).

Radiation Transport Calculations Using EGS4: A Four-Day Hands-on Course, Sept. 24-27, 1990, Ottawa, Canada. Contact: Dr. A. F. Bielajew, Div. of Physics, National Research Council of Canada, Ottawa, Canada, K1A 0R6 (phone 613-993-2715, Bitnet BLF@NRCVM01).

International Conference on Monte Carlo Methods for Neutron and Photon Transport Calculations, Sept. 25-28, 1990, Budapest, Hungary. Contact: Dr. Lázló Koblinger, Central Research Inst. for Physics, P.O. Box 49, H-1525 Budapest, Hungary (Fax 36-1-15552530).

The Safety, Status and Future of Non-Commercial Reactors and Irradiation Facilities, Sept. 30-Oct. 4, 1990, Boise, Idaho, ANS Topical Meeting, sponsored by the Idaho Section and co-sponsored by The Commission of the European Communities (CEC), Atomic Energy Society of Japan, and the Nuclear Reactor Safety Division of the ANS. Contact: Dr. Romney B. Duffey, General Chairman, The Safety, Status and Future of Non-Commercial Reactors and Irradiation Facilities, P.O. Box 51218, Idaho Falls, ID 83405-1218 (phone 208-526-9804).

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).

9th Topical Meeting on Technology of Fusion Energy, Oct. 8-12, 1990, Chicago, sponsored by the American Nuclear Society. Contact: Dr. Charles Baker, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439 (phone 312-972-4836, FTS 972-4836).

November 1990

Nuclear Energy Forum, Nov. 11-14, 1990, Washington, D. C., sponsored by the U.S. Council for Energy Awareness. Contact: Conference Office, U.S. Council for Energy Awareness, 1776 I Street, NW, Suite 400, Washington, DC 20006-2495 (phone 202-293-0770).

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.

International Symposium on High-Dose Dosimetry for Radiation Processing, Nov. 12-16, 1990, Vienna, sponsored by IAEA. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

September 1991

ICNC '91, International Conference on Nuclear Criticality Safety, September 1991, Oxford, United Kingdom. Contact: ICNC '91 Secretariat, Publicity Office, AEA Technology, Winfrith, Dorchester, Dorset DT2 8DH, United Kingdom (phone 0305 251888 ext 2739, Fax 0305 202122, Telex 41231).

DECEMBER 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

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NCRP Report 102, . . *Medical X-Ray, Electron Beam, and Gamma-Ray Protection for Energies up to 50 MeV: (Equipment, Design, Performance and Use): Recommendations of the Nat. Council on Rad. Protection and Measurements*, . . 1989, . . National Council on Radiation Protection and Measurements

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Health Phys., **57(6)**, **909-916**, . . *Measurements of Radioactive Gaseous Releases to Air from Target Halls at a High-Energy Proton Accelerator*, . . Butala, S.W.; Baker, S.I.; Yurista, P.M., . . Dec. 1989

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COMPUTER CODES LITERATURE

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. **SPECTRAN-F**

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BOOK **GROUNDWATER**

Modeling Groundwater Flow and Pollution: With Computer Programs for Sample Cases, . . Bear, J., . . Reidel Publishing Company, . . 1987

CEA-CONF-9706 **TRIPOLI-2**

Neutrons and Gamma Transport in Atmosphere by TRIPOLI-2 Code. Energy Deposit and Electron Current Time Function, . . Vergnaud, T.; Nimal, J.C.; Ulpate, J.P.; Faucheux, G., . . CEA Centre d'Etudes de Limeil, 94-Villeneuve-Saint-Georges, France, . . 1988

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