

# RSIC Newsletter



**Oak Ridge National Laboratory**  
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*Industry, economy, honesty and kindness form a quartet of virtue  
that will never be improved upon.—James Oliver*

## ANS NEWS TO NOTE

After the ballots were counted **M. Jack Ohanian**, of the University of Florida, was elected Vice President/President-Elect for 1989-90 to succeed **Walter B. Loewenstein**, presently serving as President, for the 1990-91 term. **Donald W. Edwards**, Yankee Atomic Electric Company, was elected to a two-year term as treasurer.

### ANS Fellows

Several members were elected to the grade of Fellow and honored during the Honors and Awards Luncheon. The following are mentioned by reason of their work and interest in radiation protection, shielding, transport, and waste management.

**Ramon L. Ashley** for significant contributions to various areas of nuclear power development, including the application of radiation attenuation theory to nuclear plant shielding technology; for important contributions to nuclear plant licensing and safety; and for distinguished service to ANS, including the cofounding of the Shielding Division

and the chairmanship of two divisions and the Finance Committee.

**George I. Coulbourn** for sustained and significant accomplishment in application technology for the development, design, licensing, construction, and quality assurance of test reactors, large commercial nuclear power plants, waste management and uranium enrichment facilities; for nuclear theory curriculum development; and for service to the education and guidance of graduate level nuclear engineering students.

**Todd V. Crawford** for technical development and leadership in the area of mathematical models for long-range atmospheric transport and dispersion of radionuclides; for the development of an effective nuclear emergency response program; and for leadership in the development of environmental programs at the Savannah River Plant.

**Donald J. Dudziak** for his contributions and outstanding accomplishments in radiation and shielding analysis of magnetic and inertial confinement fusion reactor systems and for the development of numerical methods for radiation transport and sensitivity analysis to support these studies.

## CHANGES TO THE COMPUTER CODE COLLECTION

Three changes were made to the computer code collection during the month. One code systems was packaged and added to the collection, and two existing code packages were replaced with newly frozen versions. Two changes resulted from foreign contributions.

### PSR-146/ALICE-87

A newly frozen version of this code system for statistical model calculations with fission competition was contributed by the International Atomic Energy Agency (IAEA), Vienna, Austria, through the NEADB in Gif-sur-Yvette, France. ALICE-87 is a revision of the earlier ALICE and OVERLAID ALICE codes developed at Lawrence Livermore National Laboratory in California. The code, designed for excitation energies up to 300 MeV, performs several types of calculations including a standard Weisskopf-Ewing evaporation with multiple particle emission, s-wave approximation to give an upper limit to the enhancement of gamma-ray deexcitation due to angular momentum effects, and an evaporation calculation that can include fission competition via the Bohr-Wheeler approach. ALISO, a version modified to calculate isotopically weighted results, is also included. ALICE-87 compiled with the IBM Professional FORTRAN Version 1.0 compiler, and ALISO compiled with Microsoft FORTRAN 4.01. Memory requirements for the executable modules on an IBM PC/AT are: 530K (ALICE) and 525K (ALISO). The package is available on one DS/HD (1.2Mb) diskette. References: UCID-20169 (September 1984), UCID-19614 (November 1982), Phys. Rev. C, 28(4) 1475-1492 (October 1983), and informal notes. FORTRAN 77; IBM PC/AT.

### PSR-171/NJOY89

A newly frozen version of this code system for producing pointwise and multigroup neutron and photon cross sections from ENDF/B evaluated nuclear data was provided by Los Alamos National Laboratory, Los Alamos, New Mexico. NJOY89 includes some bug fixes, but its main feature is support of the new ENDF-6 format. Following are some of the major features of this version. In module GROUPE, ENDF-6 file 6 and charged particle capabilities were added. Also added to GROUPE

were the VITAMIN-E, 174-group and VITAMIN-J, 175-group structures. GROUPE now includes an option to make the thermal part of the CLAW and VITAMIN-E weight functions depend on temperature. In module MODER, 'file 6 law 7' option was added. An option was added to THERMR to scale the incident energy grid and 'emax' for temperatures above 3000 K. THERMR was also modified to handle smaller values of  $S(,)$  and to allow asymmetric  $S(,)$  as found in ortho- and para-hydrogen. ACER was modified to handle one form of file 6 coupled energy-angle distribution. The Hybrid R-Function option was added to RECONR. File 6 heating and damage capability were incorporated in HEATR. Charged particle capability is a new option in MATXSR. The modules provided in PSR-171 are the NJOY driver program, RECONR, BROADR, UNRESR, HEATR, THERMR, GROUPE, GAMINR, ERRORR, COVR, MODER, DTFR, CCCCC, MATXSR, ACER, and PLOTR. It is convenient to use an UPDATE-type facility to implement and maintain NJOY89. The machine-independent UPDATE emulator developed at Sandia National Laboratories 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 requestors will also receive PSR-245/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.

### PSR-274/PLOTTAB-87.2

This plotting code system was contributed by the IAEA, Vienna, Austria, through the Nuclear Energy Agency Data Bank, Gif-sur-Yvette, France. PLOTTAB-87.2 is designed to plot any combination of continuous curves and/or discrete points using user-supplied titles and x and y axis labels and units. The program runs on mainframe and IBM PC/AT computers and requires a Calcomp like graphics interface. The package is available on one DS/DD (360kb) diskette. Reference: IAEA-NDS-82 (Jan. 1988) and IAEA-NDS-83 (June 1987). FORTRAN 77; IBM PC/AT.

## 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.

**Sally Hartzell**, Industry Sales Manager at Power Computing Company in Texas, has been named the new chairman of Subcommittee ANS-10, Mathematics and Computation. Hartzell has been a member of the committee for five years and chaired the recent revision of ANS-10.2-1988, *Recommended Programming Practices to Facilitate the Portability of Scientific Computer Programs*.

## RSIC Staffer Retires

**Ann B. Gustin** retired effective August 1, 1989, after 25 years with the Oak Ridge National Laboratory. Ann's career at ORNL began after she received a B.S.S.A. (Bachelor of Science in Secretarial Administration) from the University of North Carolina at Greensboro.

She first joined ORNL in the Security Department where she expedited the declassification of technical documents for open publication. After taking a number of years off to raise a family, she joined the RSIC staff, where she coordinated the review and processing of published shielding literature for the accession list of this newsletter and for the Storage and Retrieval Information System (SARIS). She is a co-author of the seven volumes of ORNL/RSIC-5, *Bibliography, Subject Index, and Author Index of the Literature Examined by the Radiation Shielding Information Center (Reactor and Weapons Radiation Shielding)*.

We at RSIC salute Ann for the many services she has performed and wish her a contented and happy retirement.

## Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Wilson Jose Vieira*, University of Tennessee-Knoxville; *Kenneth D. Lewis*, Lawrence Livermore National Laboratory, California; *Bill Atwell*, Rockwell International, Houston, Texas; and *Leif Peterson*, Kelsey-Seybold, Houston, Texas.

## Calendar

Your attention is directed to the following events of interest.

### September 1989

*Practical Radiation Shielding*, Sept. 5-8, 1989, a short course offered by Shonka Research Assoc., Inc., and Georgia Institute of Technology. Contact: Education Extension-R, Georgia Inst. of Technology, Atlanta, GA 30332-0385 (phone 404-894-2400).

*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).

*Simulation Fidelity Workshop III*, Sept. 19-21, 1989, US Air Force Academy, Colorado, sponsored by the Defense Nuclear Agency, the Department of Energy, and Sandia National Laboratories. Contact: Paul Caldwell, Technical Coordinator, DoD Nuclear Information Analysis Center, 2560 Huntington Ave., Suite 500, Alexandria, VA 22303 (phone 703-960-4774).

*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).

*Workshop on Radiation Damage Correlation for Fusion Conditions*, Sept. 28-Oct. 3, 1989, Silkeborg, Denmark, sponsored by the Risoe National Laboratory. Contact: B. N. Singh, Risoe National Laboratory, Metallurgy Dept., DK-4000 Roskilde, Denmark.

#### 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, ORNL, P.O. Box Y, FEDC Building, Oak Ridge, TN 37831 USA (phone 615-576-5500 or FTS 626-5500).

*Meeting on Human Exposure to Natural Radiation: Its Variation, Regulation, and Consequences*, Oct. 3, 1989, London, sponsored by the Society for Radiological Protection. Contact: D.N.S. Dixon, 67 Oatlands Park, Linlithgow, W. Lothian, Scotland, UK (phone 301-244-2253).

*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).

*Supercomputing Conference*, Oct. 16-20, 1989, Santa Clara, California. Contact: R. Bailey, National Aeronautics and Space Administration, Ames Research Center, Moffet Field, CA 94035.

*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).

*19th International Symposium on Nuclear Physics: Nuclear Processes in Fusion Reactors*, Nov. 6–10, 1989, Gaussig, German D. R. Contact: D. Seeliger, Technische Universitaet Dresden, Sektion Physik, Mommsenstr. 13, DDR-8027 Dresden, GDR.

*International Symposium on Radiological Protection (ISRP)*, Nov. 20–22, 1989, Beijing, sponsored by the Chinese Medical Association. Contact: Dr. Wei Kedao, Ministry of Public Health, Laboratory of Industrial Hygiene, 2 Xinkang Street, Deshengmenwai, Beijing 100088, People's Republic of China.

*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).

*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).

*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).

*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.

#### 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).

*7th ASTM-EURATOM Symposium on Reactor Dosimetry*, Aug. 12–16, 1990, Strasbourg, France. Contact: G. P. Lamaze, NIST, Bldg. 235, Gaithersburg, MD 20899 (phone 301-975-6202).

## September 1990

16th Symposium on Fusion Technology, Sept. 3-7, 1990, London. Contact: JET Joint Undertaking, Conference Office, Abingdon, Oxon, OX14 3EA, United Kingdom.

## 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

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.

# JULY 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-760202, pp. 769-772, . . . *Determination of Secondary Barrier Thicknesses for Cobalt-60 Scattered Radiation*, . . . Syed, I.B.; Hanc, R.P., . . . In: Operational Health Physics: Proceedings, 9. Topical Symposium, Denver, CO, 9-12 Feb. 1976, . . . 1976, . . . Available from OSTI, Box 62, Oak Ridge, TN 37831.

CONF-760202, pp. 773-777, . . . *Discrepancies in the Determination of Primary and Secondary Barrier Thicknesses for Diagnostic Radiological Installations*, . . . Syed, I.B., . . . In: Operational Health Physics: Proceedings, 9. Topical Symposium, Denver, CO, 9-12 Feb. 1976, . . . 1976, . . . Available from OSTI, Box 62, Oak Ridge, TN 37831.

CONF-760202, pp. 778-780, . . . *Leakage Radiation Calculations for Diagnostic X-Ray Machines*, . . .

Sayeg, J.A., . . . In: Operational Health Physics: Proceedings, 9. Topical Symposium, Denver, CO, 9-12 Feb. 1976, . . . 1976, . . . Available from OSTI, Box 62, Oak Ridge, TN 37831

CONF-870629, Vols. 1-3, . . . *XIV Fusion Madrid 1987: Contributed Papers*, . . . European Conference on Controlled Fusion and Plasma Physics, June 1987, . . . European Physical Society, . . . 1987

CONF-8706303, pp. 468-471 (in Serbo-Croat), . . . *Study of the Concrete Shielding Properties*, . . . Simovicj, R.; Marinkovicj, N., . . . In: Proceedings of the Fourteenth Yugoslav Symposium on Radiation Protection, Novi Sad, Yugoslavia, 8-11 June 1987, . . . Yugoslav Radiological Protection Association, Belgrade, . . . 1987

CONF-880401, Vol. 1, pp. 355-360; IAEA-CN-51/44, Vol. 1, pp. 355-360, . . . *Optimization of Shielding for a 60 MeV Alpha Particle Accelerator*, . . . Sarkar, P.K.; Mathukrishnan, G., . . . In: Radiation Protection in Nuclear Energy. Proceedings of an International Conference Held in Sydney, 18-22 April 1988, . . . IAEA, Vienna, Austria, . . . 1988

CONF-880906-3; SAND-88-0850C, . . . *Progress in Nodal Transport Methods*, . . . Badruzzaman, A., . . . Proceedings of the 7. International Conference on Radiation Shielding, 12-16 September 1988, Bournemouth, UK, . . . 1988, . . . MF available from INIS and from NTIS, PC A03/MF A01

INDC(CCP)-297/GE, . . . *The International Evaluated Nuclear Structure Data File (ENSDF) in Fundamental and Applied Photonuclear Research*, . . . Boboshin, I.N.; Varlamov, V.V., . . . April 1989, . . . IAEA, Nuclear Data Section, Vienna, Austria

INIS-SU-64, pp. 28-32 (in Russian), . . . *Adaptive Balance Integration Algorithm for Solving the Problems of Radiation Transport in Spherical Configuration*, . . . Dubinin, A.A.; Kurachenko, Yu.A.; Frolov,

O.V., . . In: Nuclear Reactor Physics and Engineering. Scientific-Technical Collection., . . 1987, . . MF available from INIS

**INIS-SU-64, pp. 32-38 (in Russian), . . Optimal Computational Schemes for Solving Multigroup Photon Transport Problem, . .** Dubinin, A.A.; Kurachenko, Yu.A., . . In: Nuclear Reactor Physics and Engineering. Scientific-Technical Collection., . . 1987, . . MF available from INIS.

**INIS-SU-64, pp. 39-44 (in Russian), . . Analysis of Some Splitting and Roulette Algorithms in Shield Calculations by the Monte Carlo Method, . .** Korobejnikov, V.V.; Aleshechkin, V.N., . . In: Nuclear Reactor Physics and Engineering. Scientific-Technical Collection., . . 1987, . . MF available from INIS.

**JAERI-M-88-103, . . Accuracy Evaluation of the Current Data and Method Applied to Shielding Design of the Fusion Experimental Reactor (FER), . .** Mori, S.; Kobayashi, T.; Seki, Y., . . 1988, . . MF available from INIS

**JINR-E-13-89-61, . . Application of the Monte Carlo Method to Determine the Thickness of a Delta E-Detector, . .** Kozma, P., . . 1989, . . Joint Inst. for Nuclear Research, Dubna, USSR

**ORNL/CSD/TM-247, . . Assessment of Criticality Computational Software for the U.S. Department of Energy Office of Civilian Radioactive Waste Management Applications, . .** Westfall, R.M.; Dyer, H.R.; Petrie, L.M., . . October 1989, . . NTIS, PC A04/MF A01

**ORNL/TM-10714, . . ORMONT: An Uncertainty Analysis Code for Use with User-Developed Systems Models on Mainframe or Personal Computers, . .** Williams, K.A.; Hudson, C.R., II, . . May 1989, . . Oak Ridge National Laboratory, Oak Ridge, TN.

**ORNL/TM-11147, . . Data Base Management Activities for the Remedial Action Program at ORNL: Calendar Year 1988, . .** Voorhees, L.D.; Gentry, M.J.; Faulkner, M.A.; Newman, K.A.; Rosen, A.E.; Hook, L.A.; McCord, R.A.; Bledsoe, J.L.; Owen, P.T., . . April 1989, . . NTIS, PC A10/MF A01

**PSI-12, . . Shielding Performance of the NET Vacuum Vessel, . .** Arkuszewski, J.J.; Jaeger, J.F., . . August 1988, . . Paul Scherrer Inst., Villigen, Switzerland, . . MF available from INIS

**SAAS-Mitt-88-04 (in German), . . Guideline on Radiation Protection Requirements for Ionizing Radiation Shielding in Nuclear Power Plants, . .** Staatliches Amt f. Atomsicherheit und Strahlenschutz, Berlin, German Democratic Republic, . . MF available from INIS

**SAND-87-2808, . . The Potential Consequences and Risks of Highway Accidents Involving Gamma-Emitting Low Specific Activity (LSA) Waste, . .** Ostmeyer, R.M., . . 1987, . . Sandia National Laboratory, Albuquerque, NM

**SAND-88-1156, . . A Review of Near Field Sea-Water Sediment Interactions to the Seabed Disposal of**

**Nuclear Waste, . .** Krumhansl, J.L., . . March 1989, . . Sandia National Laboratory, Albuquerque, NM

**Aequ. Math., 36(1), 99-111, . . On a Class of Nonlinear Integral Equations Arising in Neutron Transport, . .** Argyros, I.K., . . 1988

**Ann. Nucl. Energy, 15(8), 389-396, . . Development of a Legendre Polynomial Nodal Model for the Multigroup Transport Theory  $P_N$  Approximation, . .** Feiz, M.; Rohach, A.F., . . 1988

**Ann. Nucl. Energy, 15(8), 397-419, . . Composite Finite Element Solutions for Neutron Transport, . .** Ackroyd, R.T.; Wilson, W.E., . . 1988

**Health Phys., 57(1), 107-116, . . Use of a Simulation Model in Occupational Dose Assessment at a High-Level Radioactive Waste Repository, . .** Maheras, S.J.; Tarapore, P.S.; Borak, T.B.; Clark, G.M., . . July 1989

**Health Phys., 57(1), 131-139, . . Risks of Radioactive Material Transportation Accidents in Oregon, . .** Humphries, L.L.; Dodd, B., . . July 1989

**J. At. Energy Society of Japan, 31(4), 477-486 (in Japanese), . . New Gamma-Ray Buildup Factor Data Base for Point Kernel Method and Application to Shielding Calculation, . .** Harima, Y.; Tanaka, S.; Sakamoto, Y.; Hirayama, H., . . 1989

**Jad. Energ., 34(8), 315-318 (in Czech), . . Provisional Shielding for Laboratory Measurements of Low Level Activities With Semiconductor Detectors, . .** Tvrdy, L.; Valasek, J.; Fiala, E.; Ohera, M., . . August 1988, . . English translation available from Nuclear Information Center, 156 16 Prague 5-Zbraslav, Czechoslovakia (\$10/page).

**N.E.A. Data Bank Newsl., No. 30, 1-38, . . Blind Intercomparison for  $n + {}^{184}\text{W}$  at 25.7 MeV, . .** Vonach, H.K.; Nagel, P., . . February 1989

**Nucl. Instrum. Methods, A270(2,3), 527-536, . . Monte Carlo Calculation of the Response Function for a  ${}^3\text{He}$  Neutron Spectrometer, . .** Sailor, W.C.; Prussin, S.G., . . July 15, 1988

**Nucl. Sci. Eng., 102(3), 295-309, . . Systematics of Criticality Data of Special Actinide Nuclides Deduced Through the Trombay Criticality Formula, . .** Srinivasan, M.; Subba Rao, K.; Garg, S.B.; Acharya, G.V., . . July 1989

**Nucl. Technology, 86(1), 30-34, . . In Situ Measurement of Low-Level Radioactivities Using the Compton Suppression Technique, . .** Yuan, L.J.; Weng, P.S.; Chan, C.C., . . July 1989

**Radioisotopes, 37(5), 282-284, . . Ambient Dose Equivalent Rate Constant for Several Radioactive Nuclides, . .** Tada, J., . . May 1988

**Trans. SAEST (Soc. Adv. Electrochem. Sci. Tech.), 22(4), 219-222, . . Some Aspects of Thick, Soft Nickel Plating for End Shields of Atomic Power Plants, . .** Krishnaswamy, R., . . Indira Gandhi Centre for Atomic Research, Kalpakkam, India, . . Oct./Dec. 1987

**BOOK**, . . *Radiation Effects on Teflon*, . . Bouquet, F.L., . . 1989, . . Systems Company, P.O. Box 876, Graham, WA 98338-0876. Price

**BOOK**, pp. 55-58 (in Russian), . . *On Possibility of Using the Composite Reinforced Concrete Structures in Biological Shields of Nuclear Facilities*, . . Ivanov, V.N., . . In: Egorov, Yu.A. (ed.) *Radiation Safety and Radiation Protection of NPP*, Issue 12. Collection of Papers., . . 1987, . . Ehnergoatomizdat, Moscow, USSR

**BOOK**, pp. 146-161 (in Russian), . . *Direct Estimations of the Accuracy of Multigroup Approximation in Solving Neutron Transport Equation in Shields*, . . Bazykov, A.I.; Veselkin, A.P.; Vasyukhno, V.P., . . In: Egorov, Yu.A. (ed.) *Radiation Safety and Radiation Protection of NPP*, Issue 12. Collection of Papers., . . 1987, . . Ehnergoatomizdat, Moscow, USSR

**BOOK**, pp. 161-164 (in Russian), . . *Studying the Errors Introduced by Application of Group Cross Section of Neutron Elastic Slowing-Down into Calculations of Radiation Shield Problems*, . . Androsenko, P.A.; Dubinin, A.A.; Karachenko, Yu.A.; Petrov, E.H., . . In: Egorov, Yu.A. (ed.) *Radiation Safety and Radiation Protection of NPP*, Issue 12. Collection of Papers., . . 1987, . . Ehnergoatomizdat, Moscow, USSR

**BOOK**, . . *Information Technology and the Conduct of Research: The User's View*, . . Panel on Information Technology and the Conduct of Research, . . 1989, . . National Academy Press, Washington, D.C.

#### COMPUTER CODES LITERATURE

ANL-87-52 . . . . . CERAMICS EVALUATION  
X-Ray Computed Tomography for Nondestructive Evaluation of Advanced Structural Ceramics., . . Ellingson, W.A.; Vannier, M.W., . . Argonne National Lab., IL, . . September 1988

CONF-870306, 477-82 . . . . .  
. . . . . DISNEL; PATHRAE; PATHRAE-T  
Potential Exposures and Health Effects from Spent Fuel Transportation., . . Rogers, V.C.; Sandquist, G.M.; Sutherland, A.A., . . Rogers and Associates Engineering Corp., Salt Lake City, UT, . . 1987

CONF-870306, 579-84 . . . . . SYVAC A/C  
Case Study on the Use of Importance Sampling in the Probabilistic Risk Assessment of Underground Disposal of Radioactive Wastes., . . Johnson, K., . . CAP Scientific, London, UK, . . 1987

ENEA-RT-TIB-87-40 . . . . .  
. . . . . TESEO; MC<sup>2</sup>-II; GERES; ANISN; MEDIL  
TESEO Code Validation., . . Galli, M.; Fioni, G., . . ENEA, Rome, Italy; ENEA, Bologna, Italy, . . 1988, . . AVAIL: INIS (microfiche only)

EPRI-NP-6111 . . . . . MAAP-3.0  
Parametric Radionuclide Release Calculations Using the MAAP-3.0 Computer Code., . . Mendoza,

Z.T., . . Science Applications International Corporation, Los Altos, CA, . . November 1988  
IAEA-SM-296/22, Vol.2, 29-36 . . . . .

. . . . . WECHSL; CORCON; VANESA  
Source Term Uncertainties from Core-Concrete Interactions in a PWR of KWU Design., . . Schroedl, E.; Friederichs, H.G., . . Gesellschaft fuer Reaktorsicherheit m.b.H., Koeln, Germany, . . 1988

INIS-BR-1440, 14 (In Portuguese) . . . . . FANTI  
Modifications in the FANTI Computer Code and Preparation of a Version for Microcomputers., . . Antunes, L.J., . . Instituto de Engenharia Nuclear, Rio de Janeiro, Brazil, . . 1987, . . AVAIL: INIS (microfiche only)

INIS-BR-1440, 51 (In Portuguese) . . . . . SPEKT  
SPEKT Computer Program and Neutron Spectra Analysis from <sup>252</sup>Cf., . . Cabral, S.C.; Suita, J.C.; Lesiecki, H.; Klein, H., . . Instituto de Engenharia Nuclear, Rio de Janeiro, Brazil, . . 1987, . . AVAIL: INIS (microfiche only)

INIS-BR-1440, 55 (In Portuguese) . . . . . FANTI  
Performance Testing of FANTI Computer Code., . . Antunes, L.J.; Suita, J.C., . . Instituto de Engenharia Nuclear, Rio de Janeiro, Brazil, . . 1987, . . AVAIL: INIS (microfiche only)

NEANDC-246 'U' . . . . . DECAY HEAT  
International Comparison Study of Codes Used in Decay Heat Calculations., . . Duchemin, B.; Nordberg, C., . . CEA-CEN Saclay, France; NEA Data Bank, Gif-sur-Yvette, France, . . November 1988

NEANDC-253 'U' . . . . .  
. . . . . GNASH; STAPRE; TNG; PRECO-D3; PEQGM;  
EXIM; ALICE; GDH  
Blind Intercomparison for n + <sup>184</sup>W at 25.7 MeV., . . Vonach, H.K.; Nagel, P., . . Institut fur Radiumforschung und Kernphysik, Vienna, Austria; NEA, Gif-Sur-Yvette, France, . . February 1989

Nucl. Instrum. Meth., A254, 129-34 . . . . .  
. . . . . ACCEPT; TIGER; CYLTRAN  
Energy Resolutions of a Position-Sensitive NaI Detector by Monte Carlo Simulations., . . Tang, S.M.; Hsu, H.H.; Simmons, J.E.; Kapustinsky, J.; Peng, J.C., . . Los Alamos National Laboratory, NM, . . 1987

Nucl. Instrum. Meth., A263, 483-86 . . . . . EFDET  
A Computer Program for Calculating Ge(Li) Detector Counting Efficiencies with Large Volume Samples., . . Zikovsky, L.; Chah, B., . . Ecole Polytechnique, Montreal, Canada, . . 1988

ORNL/RSIC-50 . . . . . DISCRETE ANGLE BIASING  
Discrete Angle Biasing in Monte Carlo Radiation Transport., . . Cramer, S.N., . . Oak Ridge National Laboratory, TN, . . May 1988

ORNL/RSIC-51 . . . . . COHERENT SCATTERING  
The Effect of Coherent Scattering in Photon



- Radiation Transport Calculations., . . Cramer, S.N.;  
Kirk, B.L.; Broadway, J., . . Oak Ridge National  
Laboratory, TN; . Environmental Protection  
Agency, Alabama, . . April 1989
- ORNL/TM-10714 . . . . . ORMONTE  
ORMONTE: An Uncertainty Analysis Code for Use  
with User-Developed Systems Models on  
Mainframe or Personal Computers., . . Williams,  
K.A.; Hudson, C.R., II, . . Oak Ridge National  
Laboratory, TN, . . May 1989
- UCRL-53861, Vol.3 . . . . . GRPANL  
Program Listings for GRPANL: A Suite of  
Computer Programs for Analyzing Complex Ge and  
Alpha-Particle Detector Spectra, Volume 3., . .  
Gunnink, R.; Ruhter, W.D.; Niday, J.B., . .  
Lawrence Livermore National Laboratory, CA, . .  
March 1989
-