

RSIC Newsletter



Oak Ridge National Laboratory
POST OFFICE BOX 2008 ! OAK RIDGE, TENNESSEE 37831-6362
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

Phone No. 615-574-6176
FAX 615-574-6182

BitNet: PDC@ORNLSTC • Internet: PDC@ORNL.GOV

No. 353

April 1994

The difference between an educated and uneducated man is the same difference as between being alive and being dead.—Aristotle

Kirk Takes On New Assignment

Bernadette Kirk has been selected to be Technical Assistant to the new Computing, Networking, Informatics, and Education (CNIE) Directorate at Oak Ridge National Laboratory (see the March 1994 *RSIC Newsletter* for details about the new CNIE Directorate). This will be a 2-year assignment. She has been asked to do some tasks for CNIE already but will be located at RSIC for a few weeks pending the move to the main administration offices at ORNL.

This is a good opportunity for Bernie and we wish her success in this new role. Her leaving will create a big hole in our operation which will take a lot of cooperation among the RSIC staff to cover.

ENDF/B-V Availability

Effective February 23, 1994, a directive from the U. S. Department of Energy lifted the restrictions on foreign distribution of ENDF/B-V data. Several codes/data libraries in the RSIC collection which were derived from ENDF/B-V were subject to these restrictions. The following codes/data libraries are no longer limited to U.S. distribution only:

DLC-054/LAFPX-E
DLC-077/COVERV
DLC-091/COVFILS
DLC-105/MCNPDAT
DLC-113/VITAMIN-E
DLC-115/MATXS5A
DLC-116/MATXS6A

DLC-117/MATXS7A
DLC-130/DABL69
DLC-137/COVFILS-2
DLC-154/ANSL 5
DLC-160/KAOS LIBV
PSR-261/MICAP
PSR-286/COMBINE-PC

Fax Revisited

Fax machines are great for sending and receiving information quickly, and our user community makes liberal use of them. However, we too often get the same information a few days later in the mail, which increases the cost of doing business for you and for us. If you send a request/response to us via fax it is not necessary to send the same information in the regular mail. Every item gets handled in some way, and duplicates mean someone on the staff is handling the information more than once. Keep your original for your files and save the postage. This also applies to e-mail.

End of an Era

Time periods in human history are frequently defined in terms of technology because of the great effect on everyday human activities. The “automobile age” began early in the century, and now it is said we are in the “information age.” We in the radiation transport and shielding community have had our working lives shaped by computer technology. There was a time when we prepared decks of punched cards, and sometimes we waited for the results of our calculations for days. Perhaps we can divide the computer “ages” into mainframe, mini, and desktop. These technologies have overlapped, but generally we have moved from one to another.

A few days ago, the RSIC Data General MV/4000 minicomputer was finally retired, ending the minicomputer age for RSIC staff. It started with the delivery of a DG Eclipse S/130 16-bit minicomputer in early 1979. To fit within budget, its initial memory consisted of three 64K circuit boards. Its peripherals consisted of a disk subsystem with 20 MB of storage and two 9-track 800/1600 bpi tape drives. A line printer and 8-inch floppy disk drives were added shortly thereafter.

The computer was originally justified to keep track of RSIC code distribution. This function was indeed transferred from the ORNL central system, and as time went on, a number of hardware and software systems were added. Remote job entry allowed easier set up of mainframe code check-out and distribution. Text processing allowed Newsletter and other publications to be prepared in new ways using the ORNL phototypesetter and a NEC Spinwriter. Disk storage was increased by adding a 25MB disk and later 80MB of storage. The local DG engineer remarked that the system had “one of everything.”

In 1984, funds were found to replace the Eclipse with a 32-bit Eclipse MV/4000. Many of the peripherals and most of the software were transferred to the new machine. The MV started with 2 M of memory and approximately 600 MB of disk storage. This machine was remarkably reliable over its life, and the entire RSIC staff made use of it daily. Your correspondent even performed his thesis research and wrote the thesis on it. Even MORSE Monte Carlo calculations were performed, though generally over weekends to avoid complaints of slow computer response. TCP/IP was added, and the Eclipse served as the RSIC Internet mailbox. Your correspondent got into hot water when he allowed, without prior arrangements, direct connection to the local ethernet that ran through the building!

And so now we are fully into the desktop era. Actually the era started at RSIC in 1980 with the arrival of a Tandy Radio Shack TRS-80 Model III. Soon thereafter, the IBM PC accelerated the headlong rush into the desktop era. However, it took a number of years for all the minicomputer functions to be duplicated as well by networked desktop systems.

D. K. Trubey

CHANGES TO THE COMPUTER CODE COLLECTION

Four changes were made to the computer code collection during the month. A new code system was packaged and added to the collection, and three existing code packages were updated or enhanced to improve or expand performance.

CCC-467/ITS 3.0

OP SYS: UNIX, MVS,
VMS, DOS

Language: Fortran 77

Computers: Many

Format: tar, DOS

The documentation for the ITS 3.0 code system has been updated with the addition of the UPEML3.0 document (SAND92-0073). The PSR-245/UPEML3.0, machine portable CDC Update emulator, is included in the ITS package to aid in installation and updating the package. Users who have received the ITS package documentation without the UPEML 3.0 document should request document PSR-245. Sandia National Laboratories, Albuquerque, and NIST, Gaithersburg, Maryland developed the integrated TIGER code system, which permits a state-of-the-art Monte Carlo solution of linear time-integrated coupled electron/photon radiation transport problems

with or without the presence of macroscopic electric and magnetic fields of arbitrary spatial dependence. References: SAND91-1634 (March 1992), SAND92-0073 (April 1992) and informal notes. Fortran 77; Cray, IBM, VAX (C00467/MFMWS/00) or IBM PC (C00467/PC486/01).

CCC-494/G33-GP

OP SYS: DOS

Language: Fortran 77

Computers: PC

Format: DOS

Oak Ridge National Laboratory has enhanced this kernel integration code system for multigroup gamma-ray scattering which uses the GP buildup factor. Multiple cases can now be run in sequence as described in the original manual. The number of divisions in the scattering volume was increased from 20 to 50. For most of the input variables, input was made list-directed. This version of G33-GP is based on CCC-075/G**3 contributed by Los Alamos National Laboratory and modified by JAERI and ORNL. The Microsoft compiler (Version 5.1) was used to create the executable which runs under MS DOS and is included in the package. The source code, executable, and data files are transmitted on one DS/HD 5.25-in. (1.2 MB) diskette written in DOS format. References: Informal notes (Feb. 1994) and LA-5176 (1973). Fortran 77; IBM PC (C00494/IBMPC/01).

CCC-543/TORT-DORT 2.8.14

OP SYS: UNIX

Language: Fortran 77
and C

Computers: Cray, IBM
RISC, Sun, HP, Dec

Format: tar, DOS

Oak Ridge National Laboratory advised us of a correction required to this two- and three-dimensional discrete ordinates transport code system. An error in TORSET affects the magnitude of the top and bottom boundary sources. The error is in subroutine FLUXRZ, roughly line 715 in YTORSET.F, which reads:

$$zx = zzero + ztm(k)$$

but the ztm should be zt. The same error occurs at line 750 and requires the same correction. RSIC has not yet implemented this change in the source files. The code system is transmitted either on tape cartridge in tar format or on four DS/HD 3.5-in. (1.44 MB) diskettes in self-extracting compressed DOS files. References: ORNL-6268 (Nov. 1987), ORNL-5851 (April 1982), ORNL/TM-8362 (Sept. 1982), ORNL/TM-12246 (Jan. 1993), ORNL/TM-12359 (Aug. 1993), and Informal reports. Fortran 77 and C; Cray, IBM RISC, Sun, HP, Dec (C00543/MFMWS/03) or PC 386 (C00543/PC386/00).

CCC-624/DOSE-SGTR

OP SYS: DOS

Language: Fortran 77

Computers: PC

Format: DOS

INEL contributed this code system to calculate the integrated iodine release to the environment during a steam generator tube rupture (SGTR). The basis for DOSE-SGTR is a mass balance on the iodine as it is released from the fuel to the reactor coolant system (RCS), is transported from the RCS to the secondary coolant system (SCS) with the break flow, is partitioned to the steam in the SCS, and is transported out of the steam generator with the steam. Several assumptions used in the code are discussed in the documentation. Existing thermal and hydraulic information was used, including water mass flow rates and inventories. It is a PC-based code system, written in Fortran 77 and compiled by the Lahey Fortran compiler F77L, Ver. 5.01. One DS/HD 5.25-in. (1.2 MB) diskette written in DOS format is used to transmit the source, executable, and sample input and output files. References: EGG-NRE-10644 (Jan. 1993). Fortran 77; IBM PC (C00624/IBMPC/00).

CHANGE TO THE DATA LIBRARY COLLECTION

An existing data library was replaced with a newly frozen version.

**DLC-134/
RADDECAY 4.02**

OP SYS: DOS

Language: TrueBasic,
Fortran 77

Computers: PC

Format: DOS

Grove Engineering, Inc., Rockville, Maryland, contributed a newly frozen version of this radioactive decay data package. In this release the 185.7 keV line for U-235 has been corrected; it was previously listed as 183.7 keV. RadDecay is an interactive, microcomputer-based program for displaying radioactive decay information for any of the 497 radionuclides in the library. Data displayed includes the half-lives, radioactive daughter nuclides, probabilities per decay, and decay product energies for alpha, beta, positron, electron, X, and gamma rays. Given an initial activity and decay time by the user, RadDecay will calculate the remaining activity of a nuclide and the activity of its progeny. The program, written and compiled in TrueBasic, operates on any PC-DOS or MS-DOS compatible computer with DOS Version 2.1 or later and available memory of 400 kilobytes. Supported graphics display monitors are CGA, EGA, VGA, and Hercules.

The University of Connecticut contributed the MeV Search and Analysis program to assist in the identification of nuclides producing a spectrum on their MultiChannel Analyzer. Since it reads data derived from RADDECAY, the MEV program was added to the RADDECAY package. The MeV Fortran program was compiled with Microsoft Fortran Optimizing Compiler Version 4.10 to create the executable included in the package. The package is transmitted on one DS/HD 3.5-in. (1.44 MB) diskette in DOS format. References: Grove Report (Sept. 1993) and Informal notes (1993). TrueBasic, Fortran 77; IBM PC (D00134/IBMPC/03).

Alert to BUGLE-93 Users

It has been discovered that the infinite dilute file with the BUGLE-93 data in the DLC-175 package contains three nuclides with missing reaction cross-section data in the thermal energy range. Nuclides impacted are polyethylene, graphite and beryllium metal. The problem has been corrected at the fine-group level. The replacement file which is expected to be available within a short time period, will be mailed to users who have already received the data.

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.

Robert E. Schenter has for the second year won the *Tri-City Engineer-of-the-Year Award* for his dedicated efforts to optimize national medical isotope production, supply, and research. The presentation was made by the Washington Society of Professional Engineers, representing many engineering organizations in southeastern Washington. As a leading U.S. expert on fission reactor production of isotopes, Schenter has spearheaded efforts to alleviate U.S. shortages of medical isotopes used in the diagnosis and treatment of

cancer, osteoporosis, and other serious diseases; testified before Congress on isotope supply issues; and actively works to stimulate young people in the pursuit of scientific study. Schenter is a scientist in the Isotope Program Office of the Westinghouse Hanford Co. in Richland, Washington.

Timothy Karl Johnson has received the *1994 Robert D. Moseley, Jr. Award for Radiation Protection in Medicine*. Dr. Johnson's paper, "Photon Contribution to Tumor Dose from Considerations of ^{131}I Radiolabeled Antibody Uptake in Liver, Spleen, and Whole Body," (co-authored with S. Brent Colby) represents an important component in the effort to improve methods of determining the internal dose resulting from radioimmunotherapy. Dr. Johnson is Assistant Professor, Director of the Graduate Program in Medical Physics, and Radiation Safety Officer at the University of Colorado Health Sciences Center.

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.

MCNP Classes Offered by Los Alamos National Laboratory

The Radiation Transport Group of the Los Alamos National Laboratory is offering two classes on the MCNP Monte Carlo computer code. The first class is for multigroup/adjoint calculations and the second specializes in variance reduction methods. Hands-on computer sessions emphasizing active learning will be featured. The MCNP multigroup/adjoint capability allows generation of adjoint importance functions and direct comparison with deterministic codes using the same multigroup cross sections. The course package includes LA-12704 multigroup/adjoint documentation and all MCNP multigroup libraries, including Hansen-Roach. A preliminary list of session topics for the multigroup/adjoint class follows.

1. The CRSRD code for converting your multigroup Sn libraries into MCNP format.
2. Assistance in converting your libraries.
3. Instruction in using MCNP in the multigroup/adjoint mode.
4. Instruction in generating adjoint importance functions.

The variance reduction class will be taught by Tom Booth, a member of the Radiation Transport Group, X-6. After a description of the techniques, students will get "hands-on" TrueBasic, Fortran 77 experience applying these techniques by running MCNP calculations on LANL workstations. Variance reduction successes and failures will be analyzed. Upon completion of the class students will understand and effectively use such techniques as the weight window generator that can improve performance in some problems by orders of magnitude.

Registration for attendance at both classes is \$1400. The deadline to register is **Friday, 20 May 1994**. Late registration is accepted if available at an increased fee. The class may be cancelled if minimum registration is not met. For further information send e-mail to Judi Briesmeister at jfb@lanl.gov, telephone 505-667-7277, or FAX 505-665-5538.

To summarize:

Multigroup/Adjoint MCNP

Date: 6–7 June 1994
 Time: 8:30 am–4:30 pm
 Place: Los Alamos, NM USA
 Cost: \$750 US
 Limit: 20 students
 Audience: Intermediate-advanced MCNP users
 Features: Interactive computer sessions and CRSRD code

Variance Reduction in MCNP

Date: 8–9 June 1994
 Time: 8:30 am–4:30 pm
 Place: Los Alamos, NM USA
 Cost: \$750 US
 Limit: 20 students
 Audience: Intermediate-advanced MCNP users
 Features: Interactive computer sessions

The next two classes being offered are: Criticality Calculations with MCNP—August 8–12, and Introduction to MCNP—September 19–22. Details on these classes will be available at a later date.

Judi Briesmeister

Accelerator-Based Neutron Sources for Boron Neutron Capture Therapy

The First International Workshop on Accelerator-Based Neutron Sources for Boron Neutron Capture Therapy will be held September 11–14, 1994, in Jackson, Wyoming. It is sponsored by the U.S. Department of Energy — Office of Energy Research. The workshop will provide a forum for presentation and discussion of the current state of the art in the application of particle accelerators for the generation of thermal and epithermal neutron sources suitable for Boron Neutron Capture Therapy (BNCT). Papers that present developments in accelerator hardware, target design, and neutron spectrum tailoring devices are requested. Reporting of relevant experimental measurements, as well as theoretical calculations and conceptual system designs, is highly desirable. Special attention will also be given to the establishment of an informed consensus on the clinical and radiobiological factors that will influence future developments in the field.

Subject Categories for Contributed and Invited Papers:

- ! **New developments in accelerator technology** including radio frequency quadrupole, electrostatic quadrupole, and other applicable technologies.
- ! **Calculation and measurement of neutron and photon sources** including yields, spectra, and angular distributions for various neutron-producing nuclear interactions of interest.
- ! **Advances in accelerator target design and heat dissipation.**
- ! **Neutron filtering and moderating assemblies** for accelerator-produced neutrons: design, construction, and measurement.
- ! **Radiobiological basis for BNCT neutron beam parameters**, including establishment of requirements for spectral purity and intensity of accelerator-produced neutron beams for BNCT. Theoretical and experimental reports concerning the relative biological effectiveness of recoil protons in BNCT are of particular interest.
- ! **Boronated pharmaceutical development and its influence on neutron source design for BNCT.**

Please submit abstracts of 450–900 words (figures and tables count as 150 words each) by **April 30, 1994**. Author notification of paper acceptance will be completed by June 30, 1994. Camera-ready full papers

(approximately 10 pages) will be due at the time of the meeting. Please mail or FAX abstracts to David W. Nigg, Program Chair, Idaho National Engineering Laboratory, P.O. Box 1625, Idaho Falls, ID, USA 83415-3890 (FAX 208- 526-0528). If you wish to receive further information and registration forms for the workshop, please contact David W. Nigg at (208) 526-7627, or send the requested information via email to dwn@inel.gov.

ANS M&C 1995 Topical Meeting

The ANS Topical *International Conference on Mathematics and Computations, Reactor Physics, and Environmental Analyses* will be held April 30–May 4, 1995, in Portland, Oregon. Poster session papers are being solicited in three areas: computer codes, benchmark problems, and standards. To qualify, papers in the first area must be on computer codes that do calculations that normally would be of interest in M&C and/or Reactor Physics parlor sessions, that are available (albeit for a charge or subject to international exchanges) with documentation at the time of the meeting, and that offer new or improved methods or options. Benchmark papers must present innovative solutions of existing computational or experimental benchmark problems or must describe techniques to measure performance of computational methods in nuclear engineering. Papers on standards must fall within the scope of M&C or Reactor Physics standards activities.

Contributions submitted for the poster session should be so designated. Full papers of 5–10 pages for Benchmark and Standards, and 2–6 page detailed Computer Code Abstracts for the Computer Code papers will be reviewed for technical quality and content, and if accepted, will be published in the meeting Proceedings.

Questions related to computational benchmark papers should be addressed to Ahmed Badruzzaman (phone 310-694-7204; fax 310-694-7228; email jahmb@chevron.com), questions related to Standards should be addressed to James Dukelow (phone 509-372-4074; fax 509-372-4411; send email to dukelow@pnl.gov), and questions related to programs should be addressed to I. K. Abu-Shumays (phone 412-476-6469; fax 412-476-6924).

The deadline for submission of full papers and of computer program abstracts is **September 15, 1994**. Please send four copies to the Technical Program Chair, Dr. Laural L. Briggs, Bldg. 208G, Argonne National Laboratory, Argonne, IL 60439, USA.

Calendar

Your attention is directed to the following events of interest.

April 1994

8th International Conference on Radiation Shielding, Apr. 24–28, 1994, Arlington, Texas, sponsored by the American Nuclear Society with cooperation from several international and professional societies. Contact: Dr. R. M. Rubin, TU Electric, 400 N. Olive St., LB81 24 SLIC, Dallas, TX 75201, or Nolan Hertel, Georgia Tech, Atlanta, Georgia 30332-0405 USA. R. W. Roussin is the International Liaison.

RECOD '94, 4th International Conference on Nuclear Fuel Reprocessing and Waste Management, Apr. 24–28, 1994, London. Contact: W. L. Wilkinson, RECOD '94 Steering Committee, British Nuclear

Forum, 22 Buckingham Gate, London SW1E 6LB, United Kingdom. (phone 071-828-0116; fax 071-828-0110).

42nd Annual Meeting of the Radiation Research Society, Apr. 25–29, 1994, Nashville, Tennessee. Contact: Radiation Research Society, 1891 Preston White Drive, Reston, VA 22091.

Occupational Internal Dosimetry, Apr. 25–29, 1994, a course offered by REAC/TS in Oak Ridge, Tennessee. Contact: Registrar, REAC/TS, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3131).

Specialist's Meeting on Shielding Aspects of Accelerators, Targets, and Irradiation Facilities, Apr. 28–29, 1994, Arlington, Texas. Contact: R. W. Roussin, RSIC, ORNL, P.O. Box 2008, Oak Ridge, TN 37831-6362 USA (phone 615-574-6176; fax 615-574-6182).

May 1994

9th Pacific Basin Nuclear Conference, May 1–6, 1994, Sydney, Australia. Contact: Australian Nuclear Association, P.O. Box 445, Sutherland, NSW 2232, Australia.

Advanced Health Physics (C.H.P. Part 2 Exam Study), May 1–6, 1994. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

International Workshop on Implementation of ALARA at Nuclear Power Plants, May 8–11, 1994, Long Island, New York. Contact: Dr. John W. Baum or Dr. T. A. Khan, Brookhaven National Laboratory, ALARA Center, Upton, Long Island, NY 11973 USA (phone 516-282-3228, Fax 516-282-5810).

International Conference on Nuclear Data for Science and Technology, May 9–13, 1994, Gatlinburg, Tennessee, USA. Contact: J. K. Dickens, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6356 USA (phone 615-574-6115).

Principles of Liquid Scintillation Counting, May 11–12, 1994, a continuing education course presented by North Carolina State University. Contact: Joni M. Tanner, Office of Continuing Education and Professional Development, Box 7401, Raleigh, NC 27695-7401 (phone 919-515-2261, Fax 919-515-7614).

1994 Symposium on Radiation Measurements and Applications, May 16–19, 1994, Ann Arbor, Michigan, the 8th in a series sponsored by the U.S. Department of Energy. Contact: Helen Lum, Symposium Secretary, 3034 Phoenix Memorial Laboratory, The University of Michigan, Ann Arbor, MI 48109-2100.

Radiation Safety Principles and Procedures, May 16–20, 1994, a continuing education course presented by North Carolina State University. Contact: Joni M. Tanner, Office of Continuing Education and Professional Development, Box 7401, Raleigh, NC 27695-7401 (phone 919-515-2261, Fax 919-515-7614).

Radioactive Materials Transport and Radwaste Disposal, May 16–20, 1994. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Radiopharmaceutical Internal Dosimetry, May 16–20, 1994, a course offered by REAC/TS in Oak Ridge, Tennessee. Contact: Registrar, REAC/TS, Oak

Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3131).

Environmental Radiation Surveillance, May 16–20, 1994, a course offered by the Harvard School of Public Health. Contact: Harvard School of Public Health, Office of Continuing Education, 677 Huntington Ave., Boston, MA 02115-0023 (phone 617-432-1171, fax 617-432-1969).

1994 International High Level Radioactive Waste Management Conference, May 22–26, 1994, Las Vegas, Nevada, sponsored by the American Nuclear Society and the American Society of Civil Engineers. Contact: William R. Wells, University of Nevada-Las Vegas, 4505 S. Maryland Pkwy., Las Vegas, NV 89154-4005 (phone 702-739-3699).

June 1994

41st Annual Meeting of the Society of Nuclear Medicine, June 5–8, 1994, Orange County Convention Center, Orlando, Florida. Contact: SNM, 136 Madison Ave., New York, NY 10016-6760 (phone 212-889-0717).

Radiation Safety Officer Training, June 13–17, 1994. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Management and Disposal of Radioactive Wastes, June 13–17, 1994, a course offered by the Harvard School of Public Health. Contact: Harvard School of Public Health, Office of Continuing Education, 677 Huntington Ave., Boston, MA 02115-0023 (phone 617-432-1171, fax 617-432-1969).

An Introduction to the MCBEND Monte Carlo Radiation Transport Package, June 14–17, 1994, a workshop presented by AEA Technology at Winfrith, U.K. Contact: Mrs. J. Wilkinson-James, AEA Technology, Winfrith, Dorchester, Dorset DT2 8DH, UK (phone 0305-202352; fax 0305-202746).

ANS Annual Meeting, June 19–24, 1994, New Orleans, Louisiana. Contact: ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 708-352-6611).

11th Topical Meeting on the Technology of Fusion Energy, June 19–24, 1994, New Orleans, sponsored by American Nuclear Society Fusion Energy Division. Contact: Donald J. Dudziak, Dept. of Nuclear Engineering, 110B Burlington Engg. Labs., North Carolina State University, Raleigh, NC 27695-7909 (phone 919-515-2301; fax 919-515-5115, email dudziak@ncsu.edu).

Annual Meeting of the Health Physics Society, June 26–30, 1994, San Francisco, California. Contact: HPS, 8000 Westpark Dr., Suite 130, McLean, VA 22101-8101.

Third International Symposium on Fusion Nuclear Technology, June 27–July 1, 1994, University of California, Los Angeles. Contact: Dr. Mark Tillack, 44-139 Engineering-IV, Univ. of California, Los Angeles, CA 90024-1597 (phone 310-206-1230; Fax 310-825-2599, Internet, MST@fusion.ucla.edu).

5th Annual Scientific and Technical Conference of the Nuclear Society–Nuclear Power and Industry (NP-94), June 27–July 1, 1994, Obninsk, Russia. Contact: A. Gagarinski, Russia phone 007 (095) 196 99 00; fax 007-(095) 196 20 73; telex 411594 SHUGA.

July 1994

First International Congress of Environmental Geotechnics: Geotechnical and Related Aspects of Waste Management Associated with Municipal, Mine, Industrial and Nuclear Wastes, July 10–15, 1994, Edmonton, Canada. Contact: D. C. Sego, University of Alberta, Dept. of Civil Engineering, Sego, Edmonton, T6G 2G7, Canada.

Symposium on Use of Nuclear and Related Techniques in Soil/Plant Studies for Sustainable Agriculture and Environmental Preservation, July 10–16, 1994, Acapulco, Mexico. Contact: W.E.H. Blum, Secretary General, ISSS, Univ. f. Bobenkultur, Gregor-Mendel Strasse 33, A-1180 Vienna.

Environmental Health Physics, July 11–15, 1994. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Planning for Radiation Emergencies, July 11–15, 1994, Guildford, Surrey, England. Contact: Prof. J.R.A. Lakey, c/o MOS Ltd, 17 Wrotham Road, Gravesend, Kent DA11 OPA, UK (phone 44-0-474-350580, Fax 44-0-474-320042).

6th International Radiation Physics Society (ISRP 6), July 18–22, 1994, Rabat, Morocco. Contact: D. B. Isabelle, CERI-CNRS, 3A Rue de la Ferrollerie, 45071 Orleans Cedex 2, France (fax 33-38-63-02-71) or Pr. M. Berrada, Lab. de Physique Nucléaire, Faculté des Sciences, B. P. 1014 Rabat, Morocco (Fax 212-7-77-99-78).

27th International Conference on High Energy Physics, July 21–27, 1994, Glasgow, United Kingdom. Contact: Institute of Physics, 47 Belgrave Square, London SW1X 8OX, UK.

August 1994

Occupational & Environmental Radiation Protection, Aug. 15–19, 1994, a course offered by the Harvard School of Public Health. Contact: Harvard School of Public Health, Office of Continuing Education, 677 Huntington Ave., Boston, MA 02115-0023 (phone 617-432-1171, fax 617-432-1969).

Advanced Workshop on Occupational & Environmental Radiation Protection, Aug. 22–26, 1994, a course offered by the Harvard School of Public Health. Contact: Harvard School of Public Health, Office of Continuing Education, 677 Huntington Ave., Boston, MA 02115-0023 (phone 617-432-1171, fax 617-432-1969).

September 1994

9th International Meeting on Radiation Processing, Sept. 11–16, 1994, Istanbul, Turkey. Contact: Prof. Dr. Olgun Guven, Chairman (IMRP-9), P.O. Box 177, Bahcelievler, Ankara, 06502 Turkey (phone 90-4-298-1894, fax 90-312-815-4307).

6th Russian Scientific Conference on Radiation Shielding of Nuclear Installations, Sept. 20–23, 1994, Obninsk, Russia. Contact: A. P. Suvorov, Inst. of Physics and Power Engineering, 249020, Bondarenko Sq. 1, Obninsk, Kaluga Region, Russia (fax 095-230-2326, telex 911509 URAN SU).

October 1994

European Nuclear Conference and Exhibition, Oct. 2–6, 1994, Lyon, France. Contact: P. Fuez, European Nuclear Society, P.O. Box 5032, CH-3001 Berne, Switzerland (phone 41-31-21-61-11; fax 41-31-22-92-03).

Meeting of the American Society for Therapeutic Radiology and Oncology, Oct. 3–7, 1994, Philadelphia, Pennsylvania. Contact: ASTRO, 1101 Market St., 14th Floor, Philadelphia, PA 19107-2990 (phone 215-574-3180).

ANSWERS Shielding & Criticality Seminar, Oct. 11–14, 1994, a workshop presented by AEA Technology at Winfrith, U.K. Contact: Mrs. J. Wilkinson-James, AEA Technology, Winfrith, Dorchester, Dorset DT2 8DH, UK (phone 0305-202352; fax 0305-202746).

Fourth Conference on Radiation Protection and Dosimetry, Oct. 24–26, 1994, Orlando, Florida, sponsored by the Oak Ridge National Laboratory. Contact: J. S. Bogard, ORNL, P.O. Box 2008, Oak Ridge, TN 37831-6379 (phone 625-574-5851, fax 615-574-9174).

November 1994

2nd Radiation Physics Conference, Nov. 20–24, 1994, Sadaat City, Egypt, sponsored by the Atomic Energy Authority, Menoufia University. Contact: Prof. M. A. Gomaa, Atomic Energy Authority, 101, Kasr El-Aini Street, Cairo, Egypt (phone 02-355-8269/8264, fax 02-354-0982).

March 1995

5th Topical Meeting on Tritium Technology in Fission, Fusion, and Isotopic Applications, Mar. 26–31, 1995, Augusta, Georgia, sponsored by the ANS. Contact: C. E. Murphy, Westinghouse SRC, Savannah River Lab., Aiken, SC 29808.

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. For literature listed as available from INIS contact INIS Clearinghouse, International Atomic Energy Agency, P.O. Box 100, A-1400 Vienna.

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

Proceedings. . *Tenth National Symposium on Radiation Physics (NSRP-10)*. . . 1993

Health Phys. **66(3)**, 327-338. . *Neutron Attenuation Characteristics of Polyethylene, Polyvinyl Chloride, and Heavy Aggregate Concrete and Mortars*. . . Abdul-Majid, S.; Othman, F. . 03/94

Nucl. Sci. Eng., **116**, 1-18. . *A Global Physics Approach to Transmutation of Radioactive Nuclei*. . . Salvatores, M.; Slessarev, I.; Uematsu, M. . 01/94

Nucl. Sci. Eng., **116**, 113-124. . *A Monte Carlo Variance Reduction Approach for Non-Boltzmann Tallies*. . . Booth, T.E. . 01/94. . Los Alamos National Laboratory, Los Alamos, NM

Nucl. Sci. Eng., **116**, 147-164. . *Vectorization Methods Development for a New Version of the KENO-V.a Criticality Safety Code*. . . Hollenbach, D.F.; Petrie, L.M.; Dodds, H.L. . 01/94. . Oak Ridge National Laboratory, Oak Ridge, TN. . addl. CORPAUTH: University of Tennessee, Knoxville, TN

Nucl. Sci. Eng., **116**, 165-180. . *A New Approach of Analytic Basis Function Expansion to Neutron Diffusion Nodal Calculation*. . . Jae Man Noh; Nam Zin Cho. . 01/94. . Korea Advanced Inst. of Science & Technology, Taejon, Korea

Nucl. Sci. Eng., **116**, 213-217. . *Statistical Model Calculation of the ²³⁷U Fission Cross Section*. . . Lestone, J.P.; Gavron, A. . 01/94. . Los Alamos National Laboratory, Los Alamos, NM

Nucl. Sci. Eng., **116**, 218-222. . *Study of Photon Attenuation Coefficients of Some Multielement Materials*. . . Bhandal, G.S.; Singh, K. . 01/94. . N.J.S.A. Government College, Punjab, India. . addl. CORPAUTH: Guru Nanak Dev University, Amritsar,

India

Nucl. Sci. Eng., **116**, 35-41. . *A Method for Calculating Double-Differential Cross Sections of Alpha-Particle Emissions*. . . Jingshang Zhang. . 01/94. . China Institute of Atomic Energy, Beijing, China

Nucl. Sci. Eng., **116**, 42-54. . *Solution of the Mathematical Adjoint Equations for an Interface Current Nodal Formulation*. . . Yang, W.S.; Taiwo, T.A.; Khalil, H. . 01/94. . Argonne National Laboratory, Argonne, Illinois

Nucl. Sci. Eng., **116**, 73-85. . *A Fission-Source Acceleration Technique for Time-Dependent Even-Parity Sn Calculations*. . . Morel, J.E.; McGhee, J.M. . 01/94. . University of California, Los Alamos Natl. Lab, Los Alamos, NM

Nucl. Sci. Eng., **116**, 86-95. . *Effective Diffusion Homogenization of Cross Sections for Pressurized Water Reactor Core Calculations*. . . Trkov, A.; Ravnik, M. . 01/94. . Institute Jozef Stefan, Ljubljana, Slovenia

Nucl. Technol., **105**, 14-30. . *Simulation of Hypothetical Criticality Accidents Involving Homogeneous Damp Low-Enriched UO₂ Powder Systems*. . . Basoglu, B.; Brewer, R.W.; Haught, C.F.; Hollenbach, D.F.; Wilkinson, A.D.; Dodds, H.L.; Pasqua, P.F. . 01/94. . University of Tennessee, Knoxville, TN

Nucl. Technol., **105**, 3-13. . *Criticality Safety Analysis of a Calciner Exit Chute*. . . Haught, C.F.; Basoglu, B.; Brewer, R.W.; Hollenbach, D.F.; Wilkinson, A.D.; Dodds, H.L.; Oxenham, R.L. . 01/94. . University of Tennessee, Knoxville, TN. . addl. CORPAUTH: Martin Marietta Utility Services, Piketon, OH

Nucl. Technol., **105**, 31-36. . *Modeling of Central Reactivity Worth Measurements in Lady Godiva*. . . Wenz, T.R.; Busch, R.D. . 01/94. . University of New

Mexico, Albuquerque, NM

Nucl. Technol., 105, 322-333. . *Use of Post-Chernobyl Data from Norway to Validate the Long-Term Exposure Pathway Models in the Accident Consequence Code MACCS.* . . Tveten, U. . 03/94. . Institutt for Energiteknikk, Kjeller, Norway

Nucl. Technol., 106, 1-14. . *Monte Carlo Simulation of the Massachusetts Institute of Technology Research Reactor.* . . Redmond, E.L.; Yanch, J.C.; Harling, O.K. . 04/94. . Massachusetts Institute of Technology, Cambridge, MA

Nucl. Technol., 106, 15-30. . *Assessment of the Impact of Neutronic/Thermal-Hydraulic Coupling on the Design and Performance of Nuclear Reactors for Space Propulsion.* . . Aithal, S.M.; Aldemir, T.; Vafai, K. . 04/94. . Ohio State University, Columbus, OH

E13-93-391. . *Experimental Study of Non-Power Detectors for Measurement of Gamma-Ray Dose.* . . Jin Shengren; Li Mingfei. . 1993. . Northeastern Normal University, Changchun, P.R. China

ECN-R--93-016. . *Benchmark Calculations on Resonance Absorption by ²³⁸U in a PWR Pin-Cell Geometry.* . . de Kruijff, W.J.M.; Janssen, A.J. . 12/93. . Netherlands Energy Research Foundation ECN Petten, Netherlands

INDC(SWD)-024. . *Absolute Gamma Branching Ratios for Fission Products in the Mass Range 74-165.* . . Rudstam, G. . 11/93. . Studsvik Neutron Research Laboratory, Nykoping, Sweden

RL-TR-93-176. . *Monoenergetic Neutral Particle Transport in Semi-Infinite Media.* . . Ganapol, B.D. . 09/93. . CALSPAN - UB Research Center, Buffalo, NY

Computer Codes Literature

ANL/RE-91/2V1 GW-BASIC; LTC
A Fast Reactor Transient Analysis Methodology
for PC's: Volume 1. The Computational Model. . .
Ott, K.O. . . 10/91. . Argonne National Laboratory,
Argonne, Illinois

ANSTO/E712 AUS
Generation and Validation of a Cross Section
Library Based on ENDF/B-VI for the AUS
Neutronics Code System. . . Robinson, G.S. . .
12/93. . Australia Nuclear Science & Technology
Organization, Australia

ARISEF, v. 44(10-11), 1349-1358 ALFA
ALFA: A Program for Accurate Analysis of
Complex Alpha-Particle Spectra on a PC. . .
Babeliowsky, T.; Bortels, G. . . 11/93. .
Commission of the European Communities, Geel,
Belgium

EGG-EELS-10666 PORFLOW-3D
Software Quality Assurance Plan for
PORFLOW-3D. . . Maheras, S.J. . . 03/93. . OSTI;
NTIS (doc. only); ESTSC (complete pkg.); GPO;
INIS (mf only). . . EG&G Idaho, Inc., Idaho Falls,

Idaho

EGG-NE-10138 VENTURE PC
Standard Interface File Handbook. . . Shapiro, A.;
Huria, H.C. . . 10/92. . University of Cincinnati,
Cincinnati, Ohio

FEI-2251 (In Russian) ZEMO
ZEMO System for Generating Group Constants. . .
Rinejskij, A.A.; Vorotyntsev, M.F. . . 1992. . INIS
(mf only). . . Gosudarstvennyj Komitet po
Ispol'zovaniyu Atom. Ehnergii SSSR; Obninsk,
Russia; Fiziko-Ehnergeticheskij Inst., Russia

JINR-R-10-92-220 (In Russian) SCREEN
Program SCREEN for Acquisition, Visualization,
Processing and Output of Experimental Data. . .
Rashevskij, A.V.; Semenov, B. Yu. . . 1992. . INIS
(mf only). . . Joint Inst. for Nuclear Research,
Dubna, Russia Federation

JRNCMD, v. 176(3), 199-204 ANA
A Program for Evaluation of Gamma-Spectra
(ANA). . . Mishev, P. . . 09/93. . Inst. of Nuclear
Research and Nuclear Energy, Sofia, Bulgaria

NUREG/CR-6059; SAND-92-2146 MACCS
MACCS Version 1.5.11.1: A Maintenance Release
of the Code. . . Chanin, D.; Foster, J.; Rollstin, J.;
Miller, L. . . 10/93. . OSTI; NTIS; INIS. . .

Technadyne Engineering Consultants,
Albuquerque, New Mexico; . . Nuclear Regulatory
Commission, Washington, DC; Sandia National
Laboratories, Albuquerque, Mew Mexico

NUREG/CR-5360; SAND-89-0943 XSOR
XSOR Codes Users Manual. . . Jow, Hong-Nian;
Murfin, W.B.; Johnson, J.D. . . 11/93. . OSTI;
NTIS; INIS; GPO. . . Sandia National Labs.,
Albuquerque, New Mexico; . . Nuclear Regulatory
Commission, Washington, DC; Technadyne
Engineering Consultants, Inc., Albuquerque, New
Mexico

SAND-93-2383C; CONF-940312-30: 2
. MACCS; COSYMA
Summary of Uncertainty Analysis of Dispersion
and Deposition Modules of the MACCS and
COSYMA Consequence Codes: A Joint
USNRC/CEC Study. . . Harper, F.T.; Miller, L.A.;
Young, M.L.; Goossens, L.H.J.; Cooke, R.M.; Hora,
S.C.; Pasler-Sauer, J.; Lui, C.; Kelly, N. . . 1993. .
OSTI; NTIS; INIS; GPO. . . Sandia National Labs.,
Albuquerque, New Mexico; . . PSAM Conference,
San Diego, California, 20-24 Mar 1994.

SSI-93-05 LENA
LENA P. A Probabilistic Version of the LENA Code
Version 1.0, January 1993. . . Baeverstam, U.;
Karlberg, O. . . 04/93. . INIS (mf only). . . Swedish
Radiation Protection Inst., Stockholm, Sweden

WSRC-TR-91-356 GRIMHX
GRIMHX Verification and Validation Action Matrix
Summary. . . Trumble, E.F. . . 12/91. . INIS (mf
only); OSTI; NTIS; GPO. . . Westinghouse
Savannah River Co., Aiken, South Carolina

