RSIC Newsletter

Oak Ridge National Laboratory
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MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

Phone No. 615-574-6176
FAX 615-574-6182
EasyLink Mailbox 62813374
BitNet: PDC@ORNLSTC • Internet: PDC@ORNL.GOV

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The ability to express an idea is well nigh as important as the idea itself.—Bernard Baruch

Loss of Nuclear Data Measurement Facilities Becomes Critical

The measurement capabilities of the neutron part of the U.S. Nuclear Data Program continue to erode, and as proposed, the latest reductions will essentially leave the U.S. without an intense, white neutron source. These reductions will eliminate the capability of measuring high resolution neutron cross sections in the resonance region, as well as higher energy cross sections. The last few years have seen the closing of electron linac-based white neutron sources at the National Institute for Standards and Technology and Lawrence Livermore National Laboratories. Last year the monoenergetic Fast Neutron Generator source at Argonne was shut down. This year the 14-MeV-neutron generator at the University of Michigan has lost DOE funding. The Los Alamos Meson Physics Facility (LAMPF) is scheduled for shutdown in the President's FY94 Budget, taking with it the WNR and LANSCE neutron sources. The only intense, pulsed white neutron source left in the U.S. is the Oak Ridge Electron Linear Accelerator (ORELA), and its budget has been substantially reduced: from $3.7 M (FY92) to $2.2 M (FY93) to $0.6 M (FY94). These most recent reductions result from changing priorities within the Nuclear Physics Program, located in Energy Research within DOE. A study of the most recent Nuclear Data Request List (1993), compiled with information from users and evaluators, shows more than ten years worth of measurement work (based on at least three operating facilities). Requests include those of interest to fusion energy, waste management, criticality safety, medicine, and fission reactor safety and design.

If the pending loss of these measurement capabilities is a problem for you or your program, expressions of concern may be addressed through a letter to Dr. Richard A. Meyer, Division of Nuclear Physics, ER-23/GTN, U.S. Department of Energy, 1000 Independence Ave. SW, Washington, DC 20585, with a copy to Dr. David L. Hendrie at the same address. Such letters can change a prevailing misconception that proposed reductions in the fast reactor program imply that nuclear data measurement capabilities are no longer needed.

Further information is available from Duane C. Larson, Bldg. 6010, MS-6354, Oak Ridge National Laboratory, P. O. Box 2008, Oak Ridge, TN 37831-6354, (615) 574-6119.

D. C. Larson

CHANGES TO THE COMPUTER CODE COLLECTION

Eight changes were made to the computer code collection during the month. Three new code systems were packaged and added to the collection, an existing code package was updated, one code package was extended with an additional hardware version, and three existing code packages were replaced with newly frozen versions. One change resulted from a contribution from Japan.

CCC-467/ITS 3.0

Experimental and Mathematical Physics Consultants, Gaithersburg, Maryland, contributed a repackaged version of the integrated TIGER series of this coupled electron/photon Monte Carlo code system. This version of ITS3/PC has only cosmetic changes, which include a new install procedure and linking the virtual memory manager to all executables. Four DS/HD 5.25-in. (1.2 MB) diskettes are required for transmittal. About 28 megabytes of hard disk space is required to install the system and run the sample case. The mainframe/workstation version is operable on Cray (UNICOS), IBM 3081 (MVS), IBM RISC and SUN UNIX workstations and is transmitted on either 1 DC 6150 tape cartridge or three DS/HD diskettes. References: SAND91-1634 (March 1992), Informal Notes (Feb. 1988, April 1992, and June 1992). (C00467PC48601 or C00467MFMWS00)

CCC-543/TORT-DORT

Oak Ridge National Laboratory contributed a newly frozen version of this two- and three-dimensional discrete ordinates transport code system designated Version 2.7.3. TORT and DORT calculate the fluence of particles due to particles incident upon the system from extraneous sources or generated internally as a result of interaction with the system. As compared to the last distribution, 2.6.5, DORT has adjustments to cope with difficulties in destroying files on the Cray and an all new scalar flux file that is intended to expedite plotting postprocessors. The TORT code differs primarily in improvements to the behavior when time is exceeded. Minor cleanups were also made. This release runs under UNIX operating systems on Cray, IBM RISC System/6000, Sun and HP computers. The package is available on either a DC 6150 cartridge tape or three 3.5-in diskettes (2.0 MB) written in tar format or three DS/HD (1.2 MB) diskettes in compressed mode readable by DOS. References: ORNL/TM-12246 (Jan. 1993), ORNL-6268 (Nov. 1987), ORNL-5851 (July 1982), ORNL/TM-8362 (Sept. 1982), and informal documentation (February 1993). Fortran, CAL, C; Cray, IBM RISC/6000, Sun, and HP (C00543MFMWS02).

Experimental and Mathematical Physics Consultants, Gaithersburg, Maryland, has ported the TORT-DORT 2.7.3 release to personal computers and contributed this package to RSIC. The PC release runs on both 80386 and 80486 personal computers equipped with a math coprocessor and 8 Mbytes of fast memory. All sample problems were also run with only 4 Mbytes of memory with 4 Mbytes set aside for a ramdisk. Nominal hard disk requirements are around 25 Mbytes with another 25-50 Mbytes needed to run TORT sample problem number 6. Executables were created using the Lahey F77L-EM/32 Fortran compiler, version 5.01, and the Phar Lap Dos Extender and virtual memory manager under DOS 5. This package is transmitted on three DS/HD (1.2 MB) diskettes in compressed DOS format. Fortran and C; PC 386 or 486 (C00543PC38600).

CCC-612/ALPHN

Oak Ridge National Laboratory contributed this code system for calculating (alpha,n) neutron production in canisters of high-level waste. The user specifies the mass fractions of the chemical species in the mixture and the curies of each actinide. Other basic data (stopping powers and thick-target yields) are supplied from the data libraries distributed with the program. ALPHN runs on IBM-compatible personal computers. The Ryan McFarland compiler, Version 2.10, was used to create the executable included in the package on an IBM PC 486 compatible with 640 kB memory and a math coprocessor. The package is transmitted on one DS/HD 5.25-in. (1.2 MB) diskette in DOS format. Reference: ORNL/TM-12239 (Oct. 1992). Fortran; IBM PC (C00612IBMPC00).

CCC-617/QBF

The Ship Research Institute of Tokyo, Japan, contributed this code system to simulate radiation dose rate distributions around a vehicle or a ship loading cylindrical containers filled with radiation sources. The code system calculates and plots the three dimensional radiation dose rate distribution in the form of contour maps on the specified planes. Shielding effects by steel walls and shielding material layers are taken into account in addition to the shadow effect among containers. QBF was developed on the NEC PC-9801 and has been ported to an IBM PC-486 running DOS 5.0. The Silicon Valley Software C3 F77 compiler and linker version 2.8.2 was used to create the executable file included in the package. The code GRAPH reads the output data file of QBF and plots it using the HGX graphics library. HGX is available only for PC-9801 and will not run on IBM PCs. IBM compatible users of GRAPH must replace the graphics subroutine calls. The system is transmitted on one DS/HD (1.2 MB) diskette in DOS format. References: Informal report (1993). Fortran 77, PC (C00617PC38600).

PSR-231/GRESS 2.1

Oak Ridge National Laboratory contributed a newly frozen version of this gradient enhanced software system which incorporates a few corrections to the previous release. The GRESS Fortran precompiler and run-time library are used to enhance conventional Fortran 77 programs with analytic differentiation of arithmetic statements for automatic differentiation in either forward or reverse mode. This system runs on Vax (both VMS and ULTRIX), HP 9000, IBM RISC 6000, and SUN computers. Fortran 77 and C compilers are required. The package is transmitted on 2 DS/HD diskettes written in DOS format. References: ORNL/TM-11951 (Nov. 1991), ORNL/TM-8776 (May 1983), ORNL/TM-11037 (May 1989), ORNL/TM-11261 (Nov. 1989), and ORNL/TM-12050 (March 1992). Fortran 77 and C; VAX, IBM RISC/6000, SUN and HP 9000 (P00231MFMWS01).

PSR-272/ZOTT

Los Alamos National Laboratory, New Mexico, contributed a newly frozen release of this code system to evaluate correlated data using partitioned least squares. The package now includes two new code versions, called zott66 (single precision, dimensioned for 66 integrals, intended for Crays and other long-word machines) and zott266 (double precision, dimensioned for 66 integrals, intended for Vax, Sun, personal computers, and other short-word machines). The package is transmitted on one DS/HD diskette in DOS format. Reference: LA-UR-2365 (Rev. 1989). Fortran 77; Cray, Vax, Sun and PC (P00272ALLCP01).

PSR-330/STARCODES

The National Institute of Standards and Technology, Gaithersburg, Maryland, contributed this code system to calculate stopping-power and range tables for electrons, protons, or helium ions, according to methods described in ICRU Reports 37 and 49. The codes provide output for electrons in any stopping material and for protons and helium ions in 74 materials. The codes run on IBM compatible personal computers equipped with a math co-processor and 640 kB RAM. The executables included in the package were created with the Lahey Fortran compiler. One DS/HD diskette written in DOS format is required for transmittal. Reference: NISTIR 4999 (Dec. 1992). Fortran 77; IBM PC (P00330IBMPC00).

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.

Reactor Analysis and Radiation Transport Short Courses

The Department of Nuclear Engineering at the University of Tennessee-Knoxville is offering two five-day short courses of interest to radiation transport specialists during Tennessee Industries Week (TIW-27), August 16–20, 1993.

Computational Methods in Reactor Analysis will familiarize the course participant with computational methods and computer codes currently used to describe the neutronic behavior of nuclear fission reactors. Emphasis will be placed on ?understanding" the neutronic models and associated numerical methods currently employed in codes. A good understanding of the models and methods is essential for the successful use of the codes in designing new reactors or improving the performance and safety of existing reactors. Areas to be covered include multi-dimensional diffusion theory methods and perturbation theory methods for applications in reactor statics, space-dependent kinetics, and fuel depletion; transport theory methods including the discrete ordinates method, integral transport theory, and the Monte Carlo method; and cross section generation and processing utilizing the AMPX and SCALE systems developed at ORNL. The first day of the course will cover the fundamentals of reactor physics beginning with the fission process and proceeding through development of the Boltzmann transport equation and the diffusion approximation of the transport equation. This material will provide a good foundation for the non-nuclear engineer for study of the more advanced material to be presented Tuesday through Friday. For the participant with some nuclear background, the first day would be a review of basic nuclear engineering.

Monte Carlo Analysis is designed specifically for the practicing engineer engaged in shield design and does not presume any prior knowledge of Monte Carlo methods. However, some understanding of radiation transport physics is desirable. A wide range of topics will be presented that will lead to a good understanding of the basics of Monte Carlo analysis and the specialized applications of Monte Carlo methods to practical shielding problems. Many advanced topics will be included that will promote the best use of existing computer code systems. Special attention will be paid to the understanding and Monte Carlo implementation of the adjoint analysis. Advantages and disadvantages of the adjoint mode versus the forward mode of analysis will be described including several practical applications of the adjoint mode of Monte Carlo analysis. Variance reduction techniques will be developed in a comprehensive fashion for both forward and adjoint calculations. The versatile computer code system, MORSE, will be described to illustrate the general features of Monte Carlo computer programs. The relationships of the Monte Carlo methods to other methods of solving radiation transport problems, such as discrete ordinates, will be described, as well as computational advantages and disadvantages of Monte Carlo versus the other methods. This course will cover, in depth, the theory and mathematics a user must have in order to understand and use the Monte Carlo method effectively to solve difficult problems in radiation transport.

The registration fee is $895 per person for each course. The deadline for registration in these two courses is July 31, 1993. For additional information contact T. W. Kerlin, Head of the Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Jennifer Tanner* and *Robert Stewart*, Battelle Pacific Northwest Laboratory, Richland, Washington; and *Judy L. Shinn*, NASA-Langley, Hampton, Virginia.

American Nuclear Society 1994 Topical Meeting on Advances in Reactor Physics Call for Papers is no longer available on this page.

Calendar

Your attention is directed to the following events of interest.

June 1993

Conference and International Symposium on Radionuclide Metrology and Its Applications, June 7–11, 1993, Teddington, United Kingdom. Contact: Dr. P. Christmas, National Physical Laboratory, Div. of Radiation Science and Acoustics, Teddington, Middlesex TW11 OLW, UK (Fax 4481 943 6317).

Preparation for the Health Physics Certification Exam, June 7–11, 1993, Chattanooga, Tennessee. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Safewaste '93: The Final Disposal of Nuclear Waste, June 14–18, 1993, Avignon, France, sponsored by the ANS and the European Nuclear Society. Contact: Pierre Tanguy, EDF, Direction Generale 32, Rue de Monceau, 75384 Paris Cedex 08, France.

Radioactive Materials Transport and Radwaste Disposal, June 14–18, 1993, Portland, Oregon. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

ANS Annual Meeting, June 20–24, 1993, San Diego, California. Contact: ANS, P.O. Box 97781, Chicago, IL 60678-7781.

Planning for Nuclear Emergencies, June 14–18, 1993, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-1171; Fax 617-432-1969).

In-Place Filter Testing Workshop, June 21–25, 1993, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-1171; Fax 617-432-1969).

July 1993

Annual Meeting of the Health Physics Society, July 11–15, 1993, Atlanta, Georgia. Contact: HPS. 800 Westpark Drive, Suite 400, McLean, VA 22102.

Nuclear and Space Radiation Effects Conference, July 19–23, 1993, Snowbird, Utah. Contact: P. V. Dressendorfer, Sandia National Laboratories, Division 2535, P.O. Box 5800, Albuquerque, NM 87185.

August 1993

SMiRT 12, Structural Mechanics in Reactor Technology, Aug. 15–20, 1993, Stuttgart, Germany. Contact: Prof. Karl Kussmaul, SMiRT 12, Stätliche Materialprüfungsanstalt (MPA), University of Stuttgart, Pfaffenwaldring 32, 7000 Stuttgart 80 Germany (phone 49-711-685-3582; Fax 49-711-685-3144 or 2635).

16th Reactor Operations International Topical Meeting, Aug. 16–19, 1993, Long Island, New York. Contact: Robert McNair, Brookhaven National Laboratory, Reactor Division, Bldg. 703, Upton, NY 11973 (phone 516-282-2270, Fax 516-282-3014).

Occupational & Environmental Radiation Protection, Aug. 16–20, 1993, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-1171; Fax 617-432-1969).

3rd European Space Power Conference, Aug. 23–27, 1993, Graz. Austria. Contact: J. Sanchez-Michielsen, ESTED, Power and Energy Conversion Division, P.O. Box 299, NL-2200 AG Noordwijk, The Netherlands (Fax 31-1719-84994).

8th ASTM-EURATOM Symposium on Reactor Dosimetry, Aug. 29–Sept. 3, 1993, Vail, Colorado. Contact: Patrick J. Griffin, Div. 6522, Sandia National Laboratories, Albuquerque, New Mexico 87185 (phone 505-845-9121).

Topical Meeting on Environmental Transport and Dosimetry, Aug. 31–Sept. 3, 1993, Charleston, South Carolina, sponsored by the ANS. Contact:

Robert Addis, Savannah River Laboratory, Environmental Transport Group, Bldg. 773-A, Box 616, Aiken, SC 29808 (phone 803-725-3325).

3rd European Conference on Accelerators in Applied Research and Technology, Aug. 31–Sept. 4, 1993, Orleans, France. Contact: J. L. Debrun, CNRS, Centre d'Etudes et de Recherches par Irradiation, 3A rue de la Ferollerie, F-45071 Orleans Cedex 2, France (fax 38-63-0271).

September 1993

Computational and Experimental Validation of Nuclear Power Safety and Fuel Cycle Investigations, Sept. 5–9, 1993, Moscow, Russia. Contact: Prof. V. V. Khromov, Moscow Engineering Physics Institute, Kashirskoe Shosse 31, Moscow, 115409, Russia (phone 095-324-7026, Fax 095-324-2111).

2nd European Conference on Radiations and Their Effects on Devices and Systems, Sept. 13–16, 1993, Saint-Malo, France. Contact: CEA-DAM, Service Electronique, BP 12, F-91680 Bruyeres, Le Chatel, France.

2nd International Conference on Computational Physics, Sept. 13–17, 1993, Beijing. Contact: Prof. Tian-Yuan Zhang, IAPCM, P.O. Box 8009, Beijing, P.R. China 100088 (Fax 011-86-1-201-0108).

Physics and Methods in Criticality Safety, a topical meeting of the Nuclear Criticality Safety Division of the American Nuclear Society, Sept. 19–23, 1993, Nashville, Tennessee. Contact: R. Michael Westfall, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6370 (phone 615-576-3513), or Dennis Tollefson, Y-12 Plant, P.O. Box 2009, Oak Ridge, TN 37831-8221 (fax 615-574-2000).

Radioactive Waste Volume Reduction, Sept. 27–29, 1993, Chicago, Illinois. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Environmental Effects of Nuclear Power: Calculation and Control, Sept. 28–Oct. 1, 1993, Chicago, Illinois. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Workshop on Data Analysis in Quality Control and in Radiation Protection of the Patient in Diagnostic Radiology and Nuclear Medicine, Sept. 29–Oct. 1, 1993, Grado, Italy. Contact: Dr. G. Contento, Ospedalae Santa Maria della Misericordia, Piazza Santa Maria della Misericordia 15, I-33100 la Loi 200, B-1049 Brussels, Belgium.

October 1993

12th International Conference on Non-Destructive Evaluation in the Nuclear and Pressure Vessel Industries, Oct. 3–7, 1993, Philadelphia, Pennsylvania. Contact: ASM International, Materials Park, OH 44073 USA (phone 216-338-5151; Fax 216-338-4634).

International Symposium on the Advanced Nuclear Power Systems: Design, Technology, and Strategies for Their Deployment, Oct. 18–22, 1993, Seoul, Korea. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400, Vienna, Austria.

Fall Meeting of the Division of Nuclear Physics of the American Physical Society, Oct. 20–23, 1993, Pacific Grove, California. Contact: D. V. R. Brown, Lawrence Livermore National Laboratory, Bldg. 181, L-288, P.O. Box 808, Livermore, CA 94550 (fax 510-423-8086).

Radiation Protection Engineering, Oct. 25–29, 1993, San Francisco, California. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

November 1993

Nuclear Energy Forum, Nov. 14–17, 1993, San Francisco, California. Contact: Conference Office, USCEA, 1776 I Street NW, Suite 400, Washington, DC 20006-3708 (phone 202-293-0770, Fax 202-785-4113).

Air Sampling, Nov. 16–19, 1993, Albuquerque, New Mexico. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Radiation Contamination Risk: Communicating with the Public, Nov. 29–Dec. 3, 1993, Clearwater Beach, Florida. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

January 1994

11th Symposium on Space Nuclear Power Systems, Jan. 9–13, 1994, Albuquerque, New Mexico. Contact: Richard Johnson, Inst. of Space Nuclear Power Studies, University of New Mexico, Chemical and Nuclear Engineering Dept., Albuquerque, NM 87131-1341.

February 1994

Managing Radioactive and Mixed Waste, Feb. 13–17, 1994, Albany, New York, sponsored by the Health Physics Society. Contact: John M Matusek, NENYHPS, P.O. Box 2249, Empire State Plaza Station, Albany, NY 12220-2249.

1992 HEART Conference, Feb. 14–18, 1994, Monterey, California. Contact: Logicon/RDA, ATTN: 1994 HEART Conference, Mr. Ed. Quinn, 2100 Washington Blvd., Arlington, VA 22204-5706.

March 1994

11th International Conference on the Use of Computers in Radiotherapy, Mar. 20–24, 1994, Manchester, United Kingdom. Contact: J. M. Wilkinson, Christie Hospital, Withington, Manchester M20 9BX, GB.

April 1994

Topical Meeting on Advances in Reactor Physics, Apr. 11–14, 1994, Knoxville, Tennessee, sponsored by the American Nuclear Society. Contact: B. A. Worley, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6363 USA (phone 615-574-6106) **NOTE: The Call for Papers in this newsletter.**.

ARS '94, International Meeting on Advanced Reactor Safety, Apr. 17–20, 1994, Pittsburgh, Pennsylvania. Contact: D. Squarer, Westinghouse Electric Corp., Science and Technology Center, 1310 Beulah Road, Pittsburgh, PA 15235-5098 USA (phone 412-256-2063; fax 412-256-1348).

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).

ICRS8, Apr. 24–27, 1994, Arlington, Texas. Contact: Dick Rubin, Texas Utilities Generating Company, LB81, 400 N. Olive St., Dallas, TX 75201 (phone 214-812-8247) or R. W. Roussin, Oak Ridge National Laboratory, RSIC, P.O. Box 2008, Oak Ridge, TN 37831-6362 (phone 615-574-6176).

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.

May 1994

9th Pacific Basin Nuclear Conference, May 1–5, 1994, Sydney, Australia. Contact: Australian Nuclear Association, P.O. Box 445, Sutherland, NSW 2232, Australia.

International Workshop on Implementation of ALARA at Nuclear Power Plants, May 8–11, 1993, 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).

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.

APRIL 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

Health Phys., 64, 412-416. . *Evaluation of a New High-Density Shielding Material*. . Barish, R.J. . April 1993

Nucl. Instrum. Methods A323, 656-670. . *Monte Carlo Calculations of Efficiency, Resolution, and Response Functions for the New Neutron Time-of-Flight Spectrometer at JET*. . Hoek, M. . December 1992

Nucl. Sci. Eng., 113, 314-323. . *Creating and Using a Type of Free-Form Geometry in Monte Carlo Particle Transport*. . Wessol, D.E.; Wheeler, F.J. . April 1993

Nucl. Sci. Eng., 113, 324-338. . *Quantifying the Reliability of Uncertainty Predictions in Monte Carlo Fast Reactor Physics Calculations*. . Carter, L.L.; Miles, T.L.; Binney, S.E. . April 1993

Nucl. Sci. Eng., 113, 339-366. . *A New Approach and Computational Algorithm for Sensitivity/Uncertainty Analysis for SED and SAD with Application to Beryllium Integral Experiments*. . Song, P.M.; Youssef, M.Z.; Abdou, M.A. . April 1993

Nucl. Sci. Eng., 113, 367-378. . *Detailed Behavior of Exposure Buildup Factor in Stratified Shields for Plane-Normal and Point Isotropic Sources, Including the Effects of Bremsstrahlung and Fluorescent Radiation*. . Harima, Y.; Hirayama, H. . April 1993

BNL-NUREG-34715. . *Pressure Vessel Fluence Benchmark Calculations*. . Carew, J.F.; Conkinos, D.M.; Kohut, P.; Todosow, M. . February 1984

CINDA 92. . *The Index to Literature and Computer Files on Microscopic Neutron Data*. . August 1991

DESY 92-030. . *Calculations of the Photon Dose Behind Concrete Shielding of High Energy Proton Accelerators*. . Dworak, D.; Tesch, K.; Zazula, J.M. . February 1992

DESY D3-74. . *Attenuation of the Neutron Dose Equivalent in Labyrinths Through an Accelerator Shield*. . Dinter, H.; Dworak, D.; Tesch, K. . March 1993

Informal Report-32876. . *Evaluation of Methods for Reducing Pressure Vessel Fluence*. . Aronson, A.L.; Carew, J.F.; Conkinos, D.M.; Kohut, P.; Todosow, M. . March 1983

KEK Preprint 92-158. . *Measurement of the Photon Energy-Absorption Coefficient for Air, Nitrogen and Argon at 30 keV*. . Ban, S.; Hirayama, H.; Namito, Y.; Tanaka, S.; Nakashima, H.; Nakane, Y.; Yoshizawa, M.; Nariyama, N. . December 1992

KEK Preprint 92-168. . *MC-Simulation with EGS4/PRESTA for Electro-Magnetic Sampling Calorimeter*. . Hirayama, H. . December 1992

KEK Preprint 92-174. . *Evaluation and Measurement of 55Fe Radioactivity in Accelerator Hardware Activated at High Energy Accelerator Facilities*. . Oki, Y.; Numajiri, M.; Suzuki, T.; Miura, T.; Kondo, K. . December 1992

NBSIR 85-3151. . *Compendium of Benchmark Neutron Fields for Reactor Dosimetry*. . Grundl, J.A.; Eisenhauer, C.M. . January 1986

Nucl. Instrum. Methods A322, 88-92. . *A Fast Algorithm for Monte Carlo Simulations of Multiple Coulomb Scattering*. . Kuhn, S.E.; Dodge, G.E. . October 1992

Nucl. Technol., 100, 174-183. . *Homogenization and Functionalization of One-Dimensional Cross Sections for RETRAN*. . Cronin, J.T.; Smith, K.S. . March 1992

ORNL/TM-12161. . *DNA Radiation Environments Program Spring 1991 2-Meter Box Experiments and Analyses*. . Santoro, R.T.; Whitaker, S.Y. . March 1993

ORNL/TM-12246. . *Theoretical Basis of the Linear Nodal and Linear Characteristic Methods in the TORT Computer Code*. . Childs, R.L.; Rhoades, W.A. . January 1993

ORNL/TM-12291. . *Compilation of Requests for Nuclear Data*. . Weston, L.W., Ed.; Larson, D.C., Ed. . February 1993

Proceedings. . *Proceedings of a Specialists' Meeting on Evaluation and Processing of Covariance Data*. . Maerker, R.E.; Broadhead, B.L.; Wagschal, J.J. . October 1992

Technical Reports Series No. 351. . *Planning and Management for the Decommissioning of Research Reactors and Other Small Nuclear Facilities*. . March 1993

WAPD-TM-1623. . *Improved Approximate Formulas for Flux from Cylindrical and Rectangular Sources*. . Wallace, O.J.; Bokharee, S.A. . . March 1993

COMPUTER CODES LITERATURE

CONF-920430, 93-98 . . . . . ORIGEN-2
An ORIGEN-2 Update for PCs and Mainframes.. . . Ludwig, S.B.. . . Oak Ridge National Laboratory, Oak Ridge, Tennessee. . . April 1992

EGG-GEO-10330 . . . . . FLASH
Independent Verification and Validation Testing of the FLASH Computer Code, Version 3.0. . . . Martian, P.; Chung, J. N.. . . Washington State University, Pullman, Washington. . . June 1992. . . INIS MF only; OSTI; NTIS

EGG-GEO-10368 . . . . . FLAME
Independent Validation Testing of the FLAME Computer Code, Version 1.0.. . . Martian, P.; Chung, J.N.. . . Washington State University, Pullman, Washington. . . July 1992. . . INIS MF only; OSTI; NTIS; GPO

EGG-M-91452 . . . . . EPICOR-II, MIXBATH
Evaluation of EPICOR-II Resin/Liner Lysimeter Investigation Data Using "MIXBATH" a One-Dimensional Transport Code.. . . McConnell, J.W.; Rogers, R.D.; Brey, R.R.; Sullivan, T.M.. . . Nuclear Regulatory Commission, Washington, DC; EG&G Idaho, Inc., Idaho Falls, Idaho. . . 1992. . . INIS MF only; OSTI; NTIS; GPO

CONF-920430, 1272-1280 . . . . . ORIGEN, ALPHN, ORIGEN-S
Borosillcate Glass (a,n) Sources Used with ORIGEN-Type Calculations.. . . Hermann, O.W.; Salmon, R.. . . Oak Ridge National Laboratory, Oak Ridge, Tennessee. . . April 1992

CONF-920430, 1765-1769 . . . . . STACE
STACE. An Integrated Code for Evaluating Spent-Fuel Transport Cask Containment.. . . Seager, K. D.; Reardon, P.C.; Barrett, P.R.. . . Sandia National Laboratory, Albuquerque, New Mexico. . . April 1992

EPUREY, 35, 29-36 (French) . . . . . THYC, COCCINELLE
Coupling Large Scientific Codes.. . . Caremoli, C.; Verwaerde, D.. . . Electricite de France, 92 - Clamart France. . . July 1992

EUR-13924 . . . . . LISA
LISA Package User Guide. Part III: SPOP (Statistical POst Processor). Uncertainty and Sensitivity Analysis for Model Output. Program Description and User Guide.. . . Saltelli, A.. . . Commission of the European Communities, Ispra, Italy. . . 1992. . . INIS MF only

Health Phys. 64(3), 232-252 . . . . . ECOSYS-87
ECOSYS-87: A Dynamic Model for Assessing Radiological Consequences of Nuclear Accidents.. . . Muller, H.; Prohl, G.. . . 1993

IEAv/NT-002/93 . . . . . ACES
ACES: A Pointwise Weighting Function Generator.. . . Caldeira, A.D.; Chalhoub, E.S.. . . Instituto de Estudos Avancados, Brazil. . . March 1993

IEN-27/91 (Portuguese) . . . . . QUASAR, PULSAR
QUASAR - An Interactive Program for Spectrum Analysis in Personal Computers.. . . Auler, L.T.; Nobrega, J.A.W.. . . Instituto de Engenharia Nuclear, Rio de Janeiro, Brazil. . . November 1991. . . INIS MF only

Nucl. Eng., 31, 119-129 . . . . . SCALE, APOLLO/P, MCNP, VIM, CGM
Evaluation and Validation of Criticality Codes for Fuel Dissolver Calculations.. . . Santamarian, A.; Smith, H.J.; Whitesides, G.E.. . . Institution of Nuclear Engineers, United Kingdom. . . April 1992

Nucl. Tech. 99, 177-187 . . . . . COBRA/RELAP5
COBRA/RELAP5: A Merged Version of the COBRA-TF and RELAP5/MOD3 Codes.. . . Lee, S.Y.; Jeong, J.J.; Kim, S.H.; Chang, S.H.. . . August 1992

Nucl. Technol., 99, 222-234 . . . . . CASMO-3/SIMULATE-3
Benchmark of CASMO-3/SIMULATE-3 with a New Modeling for the Chinshan and Kuosheng Boiling Water Reactors.. . . Kao, P.W.; Yang, J.T.; Ho, C.Y.; Chou, C.H.; Huang, R.C.; Sun, T.C.. . . Institute of Nuclear Energy Research, Tung-Tan, Taiwan. . . August 1992

SAND-89-2370-Vol. 4 . . . . . RADTRAN 4
RADTRAN 4: Volume 4, Programmer's Manual.. . . Kanipe, F.L.; Neuhauser, K.S.. . . GRAM, Inc., Albuquerque, NM; Sandia National Labs., Albuquerque, New Mexico. . . July 1992

INIS-BR-3085 . . . . . ANISN
Computer Code ANISN Multiplying Media and Shielding Calculation II. Code Description (Input/Output).. . . Maiorino, J.R.. . . Instituto de Pesquisas Energeticas e Nucleares, Sao Paulo, Brazil. . . 1990. . . INIS MF only

WSRC-TR-92-076 . . . . . SHIELD
SHIELD Verification and Validation Report.. . . Boman, C. . . . Westinghouse Savannah River Co., Aiken, South Carolina. . . February 1992. . . OSTI; NTIS; INIS; GPO

YKJIEW 25(5), 1-7 (Chinese) . . . . . PASC-1, . . . AMPX-II/SCALE-3, ANISN, DOT3.5, CITATION
A Code System PASC-1 for Reactor Neutronics Calculations.. . . Wang, Y.. . . Chinese Nuclear Data Center, China. . . September 1991