RSIC Newsletter

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No. 323 *October 1991*

*Survival depends on the total cooperation of all man)whether their world is a raft, a village, a country, or a planet.)*Vital Alsar (reflections during a Pacific crossing on the raft La Balsa in 1970.)

RSIC's ROLE IN DOE SOFTWARE ACTIVITIES

Many of you are aware that the centralized activity for scientific and technical software distribution will now be handled by a new organization in Oak Ridge called the Energy Science and Technology Software Center (ESTSC), and that the U.S. Department of Energy (DOE) Order governing this activity is under revision to reflect this and other changes.

The DOE Order 1360.4B, SCIENTIFIC AND TECHNICAL COMPUTER SOFTWARE (available in draft form), specifically recognizes the Radiation Shielding Information Center (RSIC) as a Specialized Information Analysis Center (SIAC) funded by various sponsors to provide information analysis center activities (including those associated with software and data) in the technical areas of radiation transport and safety. RSIC is also a party to the DOE/NEA Cooperative Arrangement on Nuclear Data and Computer Programs. The role of RSIC in providing services on behalf of the interests of our programmatic sponsors remains unchanged.

ESTSC and RSIC plan to enter into an agreement whereby RSIC will be the exclusive source of all requests for software within our technical scope. Interaction between RSIC and users covered by our programmatic sponsors will be handled in the normal fashion. For those users not currently in the above category, a charge will be assessed that is the same as that which will be required to obtain software from ESTSC. In effect, RSIC will continue to provide a full range of information analysis center services directly to the entire technical community concerned with the solution of problems associated with the broad topic of radiation transport and safety. At the same time, it will provide an equitable degree of consistency in the overall software management goals of DOE. Please contact RSIC if you have any questions. Your cooperation will be appreciated.

ADDITIONAL DETAILS ABOUT ESTSC

The Energy Science and Technology Software Center (ESTSC), located in Oak Ridge, Tennessee, is the U.S. Department of Energy's (DOE) centralized software management facility. Operated under contract for the Department's Office of Scientific and Technical Information (OSTI), the ESTSC became operational on October 1, 1991, as the National Energy Software Center (NESC) at the Argonne National Laboratory curtailed its operations.

As the central point for implementing DOE's software management program, ESTSC performs the following three major functions for the Department:

- Serves as the focal point for collecting, processing, announcing, and distributing scientific and technical software programs developed and/or modified during work supported by DOE;
- Implements the Department's international software exchange agreement with the Nuclear Energy Agency (NEA) Data Bank of the Organization for Economic Cooperation and Development (OECD);
- Acts as the operating agent to implement an agreement between the DOE and the Nuclear Regulatory Commission (NRC) to provide an information center for software developed under the auspices of NRC.

Policies and procedures for operation of the Center are promulgated under the auspices of DOE Order 1360.4B, SCIENTIFIC AND TECHNICAL COMPUTER SOFTWARE, and according to the Cooperative Arrangement Between the U.S. Department of Energy and the Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development in the Field of Nuclear Data and Computer Programs, and the NRC Software Exchange and Information Activity Agreement with the Nuclear Regulatory Commission. Policy and management oversight responsibilities are maintained by the DOE Office of Scientific and Technical Information.

R. W. Roussin

Thanks for the Messages

Reader response to our request that Email be handled differently was very positive, even though it probably takes a little more effort from the sender. The RSIC staff wishes to thank the newsletter readers for making it easier for us to serve you.

The staff has a further request that will balance the scale and save **you** time and effort. Fax machines are great for sending and receiving information quickly. However, we too often get the same information in the mail a few days later. Let's save our trees. If you send a response to us via Fax, please do not 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 same infomation more than once. You can keep your original instead of making a copy and save the postage, too.

You save the postage and paper.

CHANGES TO THE COMPUTER CODE COLLECTION

Three changes were made to the computer code collection during the month. Two existing code packages were replaced with newly frozen versions and one package was extended with an additional hardware version.

CCC-532/DORT-PC

A personal computer version of this discrete ordinates transport code system was contributed by Idaho National Engineering Laboratory. This version of DORT (ORNL Mod 5, 12 Oct 89, INEL Ver. 2.1) was derived from the Cray UNICOS

version distributed in CCC-543/TORT, developed at ORNL under Defense Nuclear Agency sponsorship. DORT-PC calculates the fluence of particles throughout a one- or two-dimensional geometric system due to sources either generated as a result of particle interaction with the medium or incident upon the system from extraneous sources. Two executable files are provided. The first, created with Lahey F77L Fortran and the Phoenix PLINK86 Overlay Linker, fits within the 640 K DOS memory limit, but problem size is limited by the small amount of memory. The second executable, created with the Lahey F77L-EM32 fortran compiler and Eclipse Linker and Binder, assumes the presence of at least 4 Mb of extended memory. With minor changes, the same source has also been compiled and run on IBM RISC workstations. The code package includes GIP, a cross-section file preparation code that generates the macroscopic cross section file. The package is distributed on 2 DS/HD diskettes. References: ORNL-5851 (April 1982). FORTRAN; IBM PC.

CCC-543/TORT

Oak Ridge National Laboratory under Defense Nuclear Agency sponsorship has released a newly frozen version of this three-dimensional discrete ordinates transport code system, designated Version 1.5.11 (19 sep 91). Based on the earlier DOT codes, TORT calculates the fluence of particles throughout two- or three-dimensional geometric systems due to particles incident upon the system from extraneous sources or generated internally. The previous release, Version 1.5.8, used a new damping algorithm that gave superior performance on thermal flux calculations inside concrete buildings, but does not converge some problems as well as that used in the 1989 version. Therefore, the default algorithm has been returned to the 1989 formulation.

Cray and IBM RISC System/6000 versions are provided. TORT is operable with 100% Fortran. Optional assembler routines provide added speed on Cray computers, and two optional C routines provide time, date, and location information in the IBM version. On Cray, UNICOS version 5 was used with the CFT77 compiler; on IBM, AIX version 2 was used with the XLF compiler. The package is available on either DC 6150 tape cartridge or 2 DS/HD (1.44 Mb) diskettes. References: ORNL-6268 (November 1987). ORNL-5851 (July 1982), ORNL/TM-8362 (Sept. 1982), ORNL/TM-9919, (April 1986). FORTRAN, CAL, C; Cray and IBM RISC/6000.

PSR-125/GNASH

Los Alamos National Laboratory, New Mexico, contributed a newly frozen version of this pre-equilibrium, statistical nuclear-model code package for calculation of cross sections and emission spectra. This revision to the GNASH code incorporates an additional option for calculating gamma-ray strength functions and transmission coefficients by including the Kopecky-Uhl model. [J. Kopecky and M. Uhl, Test of Gamma-Ray Strength Functions in Nuclear Model Calculations, *Phys. Rev. C* 41, 1941 (1990)]. In addition, improvements were made to the output routines, particularly regarding gamma-ray strength function information. GNASH provides a flexible method by which reaction and level cross sections, isomer ratios and emission spectra resulting from particle-induced reactions can be calculated. The code runs using the CFT compiler under CTSS on CRAY computers. The package is transmitted on one 5.25-inch DS/DD diskette. References: LA-6947 (November 1977) and Informal Notes (1991). FORTRAN 77; CRAY.

CHANGE TO THE DATA LIBRARY COLLECTION

An existing data library was updated, resulting from a collaboration between the United States and Japan.

DLC-129/ANS643

ANS643, contributed by Oak Ridge National Laboratory, the Tokyo Institute of Technology, and Japan Atomic Energy Research Institute, was updated with the addition of mass energy absorption coefficients. The documentation was also updated to include Development of New Gamma-Ray Buildup Factor and Application to Shielding Calculation, reprinted from *J. Nucl. Sci. Technol.* 28:1, 74-84 (1991). This package of geometric progression (GP) gamma-ray buildup factor and attenuation coefficients is based on compilation of American Nuclear Society Standards Working Group ANS-6.4.3. Also included are the GP coefficients and buildup factors as given in the ANS-6.4.3 standard. One DS/HD (1.2 MB) diskette is required for transmittal. The Daniel retrieval program was compiled with the Microsoft Fortran compiler, Version 4.01. References: Informal notes (1988, 1990, 1991), ISBN:089448-132-0 (April 1987), ANSI/ANS-6.4.3 Draft (Aug. 1990), and *J. Nucl. Sci. Technol.* (1991). FORTRAN 77; Data General MV/family, IBM 3033 (A) and IBM PC (B).

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.

Dr. Robert W. Peelle, Head of the Nuclear Data Measurement and Evaluation Section in ORNL's Engineering Physics and Mathematics Division, is retiring at the end of the this year. Effective December 1, **Dr. Duane C. Larson**, will assume the duties as Head of the section.

Peelle earned his MS and Ph.D. from Princeton University. During his years of research at ORELA, Bob has produced nuclear data of high accuracy and lasting significance in support of radiation shielding, reactor design, and other important nuclear applications.

Larson earned his BS in mathematics and physics from Wisconsin State University, his MS and Ph.D. in physics from Michigan State University in 1972. Duane began his work at ORELA in October 1972.

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Makoto Takano*, Japan Atomic Energy Research Institute, Tokyo.

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.

DETERMINISTIC METHODS SEMINAR/TORT WORKSHOP PLANNED FOR FEBRUARY 1992

There has been much interest expressed in the subject of deterministic methods, particularly the discrete ordinates approach, by the RSIC user community. We have been urged to conduct a seminar/workshop in this technical area and have tentative plans to host one in Oak Ridge during the week of February 3!8, 1992.

Since RSIC began planning this seminar the response has been quite positive. To date 57 readers from the United States and seven countries have indicated an interest in attending and/or participating in the seminar.

The seminar part will include 1½ days of invited and contributed technical presentations on developments and applications of deterministic methods for radiation transport problems. The seminar will be followed by about 1½ days devoted to the CCC-543/TORT three-dimensional discrete ordinates system. Wayne Rhoades of the Advanced Systems Group, Nuclear Analysis and Shielding Section, Engineering Physics and Mathematics Division of Oak Ridge National Laboratory will lead the workshop.

A survey form intended to gauge interest in participating in the seminar/workshop is attached as the last page of the newsletter. If you have not already done so, you may submit a copy. Further information will be mailed to those who return the form.

Oak Ridge National Laboratory under Defense Nuclear Agency sponsorship released a newly frozen version of this three-dimensional discrete ordinates transport code system, based on the earlier DOT codes. TORT calculates the flux or fluence of particles throughout two- or three-dimensional geometric systems due to particles incident upon the system from extraneous sources or generated internally. Several related programs are included in the package: the DOS driver, GIP (a cross-section file preparation code), DOTTOR (prepares external boundary sources based upon a two-dimensional calculation), VISTA (vehicle input source transformation and assembly), and GRTUNCL (produces uncollided flux file). Currently, Cray and IBM RS/6000 versions of the TORT are available.

We look forward to a strong participation in this seminar/workshop. Please return the form as soon as possible if you are interested in participating in the seminar/workshop. A registration fee will be required from attendees to cover expenses.

Calendar

Your attention is directed to the following events of interest.

November 1991

14th International Meeting on Reduced Enrichment for Research and Test Reactors will be held in Jakarta, Indonesia, Nov. 4!7, 1991. Contact: Dr. Widjang H. Sisworo, Batan, Biro Bina Program, P.O. Box 85 Kby, Jakarta 12001, Indonesia (Telex 62354, fax 021 511-110).

Nuclear Energy Forum, Nov. 10!13, 1991, San Francisco, California. Contact: Conference Office, U.S. Council for Energy Awareness, 1776 I Street, N. W., Suite 400, Washington, DC 20006-2495 USA.

1991 ANS Winter Meeting, Nov. 10!14, 1991, San Francisco. Contact: General Chair James D. Shiffer, Pacific Gas & Electric Co., 77 Beale St., San Francisco, CA 94106 (phone 415-973-4684).

International Conference on Fusion Reactor Materials, Nov. 17!22, 1991, Clearwater, Florida. Contact: P. J. Maziasz, Metals and Ceramics Division, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6376.

Symposium on Fusion Energy, Nov. 18!22, 1991, San Diego, California. Contact: Richard W. Callis, General Atomics, Fusion Division, P.O. Box 85608, San Diego, CA 92138-5608.

February 1992

1992 HEART Conference, Feb. 24!28, 1992, Albuquerque, New Mexico. Contact: DASIAC, Attention: 1992 HEART Conference, 2560 Huntington Ave., Suite 500, Alexandria, VA 22303.

March 1992

1992 Topical Meeting on Advances in Reactor Physics, March 8!11, 1992, Charleston, South Carolina, sponsored by the ANS Reactor Physics and Mathematics and Computations Divisions. Contact: Russ Ferrara, Westinghouse Savannah River Co., Savannah River Laboratory, Bldg. 786-1A, Room 5, Aiken, South Carolina 29808 (phone 803-725-8233).

Radiation Transport Calculations Using EGS4, Mar. 9!12, 1992, a four-day, 80386 microcomputer-based course to be held in Seattle, Washington, sponsored by Inst. of Applied Physics and Medicine. Contact: Susan Walker, IAPM, 701 16th Ave., Seattle, WA 98122 (phone 206-553-7330).

Practical Radiation Shielding, Mar. 9!13, 1992, Atlanta, Georgia, a course sponsored by Shonka Research Associates, Inc., and the Georgia Institute of Technology. Contact: Georgia Tech Continuing Education, Georgia Institute of Technology, Atlanta, GA 30332-0385 (phone 404-894-2400, 800-325-5007).

Occupational and Environmental Radiation Protection, Mar. 23!27, 1992, 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 617-432-3515; Fax 617-432-1969).

April 1992

28th Annual Meeting of the National Council on Radiation Protection and Measurements, Apr. 1!2, 1992, Washington, D.C. Contact: NCRP, 7910 Woodmont Ave., Suite 800, Bethesda, MD 20814 (phone 301-657-2652).

New Horizons in Radiation Protection and Shielding, Apr. 26!May 1, 1992, Pasco, Washington, a topical meeting of the ANS Radiation Protection and Shielding Division. Contact: Wilbur Bunch, HO-36, Westinghouse Hanford Co., P.O. Box 1970, Richland, WA 99352 (phone 509-376-6313).

May 1992

Radiation Protection Instrumentation, May 11!15, 1992, 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 617-432-3515; Fax 617-432-1969).

8th International Radiation Protection Association Conference, May 17!22, 1992, Montreal, Canada. Contact: G. Webb, NRPB, IRPA 8 Secretariat, Chilton, Didcot, Oxon OX11 ORQ, United Kingdom.

International Symposium on Numerical Transport Theory, May 26!28, 1992, in Moscow. Contact: Prof. T. A. Germogenova, The Keldysh Institute of Applied Mathematics, USSR Ac. of Sci., Miusskaya Sq. 4, Moscow A-47, 125047, USSR (fax 095-972-0737). Participants from the U.S. may contact Prof. Paul Nelson, Dept. of Nuclear Engg., Texas A&M University, College Station, TX 77843-3133 (fax 409-845-6443).

June 1992

American Nuclear Society Annual Meeting, June 7!12, 1991, Boston, Massachusetts. Contact: Mary Keenan, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 708-352-6611).

10th Topical Meeting on Technology of Fusion Energy, June 7!12, 1992, Boston, Massachusetts, sponsored by the American Nuclear Society and the U.S. Department of Energy. Contact: Stephen O. Dean, Fusion Power Associates, 2 Professional Drive, Suite 248, Gaithersburg, MD 20879 (phone 301-258-0545).

Environmental Radiation Surveillance, June 8!12, 1992, 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 617-432-3515; Fax 617-432-1969).

July 1992

1992 Nuclear and Space Radiation Effects Conference, July 13!17, in New Orleans. Contact: Nelson S. Saks, NSREC Technical Program Chairman, Naval Research Labortory, Code 6813, 4555 Overlook Ave., Washington, DC 20375-5000 (phone 202-767-2534, Fax 202-767-0546).

15th International Conference on High Energy Accelerators, July 20!24, 1992, Hamburg, Fed. Rep. of Germany. Contact: F. Willeke, Deutsches Elektronen-Synchrotron, Notkestrasse 85, 2000 Hamburg 52, FRG.

August 1992

Nuclear Technologies for Space Exploration, Aug. 14!17, 1992, Jackson Hole, Wyoming. Contact: Dr. David Woodall, INEL EG&G Idaho, P.O. Box 1625, Idaho Falls, ID 83415-2516.

Occupational and Environmental Radiation Protection, Aug. 17!21, 1992, 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 617-432-3515; Fax 617-432-1969).

September 1992

Hazardous and Radioactive Waste Management (Spectrum 92), Sept. 13!17, 1992, sponsored by the ANS and the U.S. Dept. of Energy. Contact: Dr. Clyde W. Frank, EM-50/6B-158, U.S. Dept. of Energy, 1000 Independence Ave., SW., Washington, DC 20585 (phone 202-586-6382)

8th International Meeting on Radiation Processing, Sept. 14!19, 1992, Beijing, China, sponsored by the International Atomic Energy Agency. Contact: International Meeting on Radiation Processing, P.O. Box 1012 (30), Beijing 100 822, China.

International Symposium on Nuclear Data Evaluation Methodology, Sept. 28!Oct. 2, 1992, Upton, New York, sponsored by Brookhaven National Laboratory. Contact: C. L. Dunford, Brookhaven National Laboratory, NNDC/197D, Upton, New York.

14th International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Sept. 30!Oct. 7, 1992, Wuerzburg, Germany, sponsored by the International Atomic Energy Agency. Contact: IAEA, Conference Service Section, P.O. Box 100, A-1400 Vienna, Austria.

April 1993

Joint International Conference on mathematical Methods and Supercomputing in Nuclear Applications, Apr. 19!23, 1993, Karlsruhe, Germany. Contact: H. Kuesters, KFK/INR, Postfach 3640 D-W-7500 Karlsruhe 1, Germany, or W. Werner, GRS, D-W-8046 Garching, Germany.

SEPTEMBER 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

Basic Life Sci., 54, pp. 235-245. . *Neutron Spectrum Measurements in the Aluminum Oxide Filtered Beam Facility at the Brookhaven Medical Research Reactor*. . Becker, G.K.; Harker, Y.D.; Miller, L.G.; Anderl, R.A.; Wheeler, F.J. . 1990

Fusion Technol. 20, pp. 144-163. . *Definition of All Relevant Local Nuclear Responses and the Total Heating in the Toroidal Field Coils During the Conceptual Design Phase of ITER*. . Zimin, S.A. . September 1991

Fusion Technol. 20, pp. 164-178. . *Shielding Design Optimization for the Compact Ignition Tokamak Test Cell Building*. . Liew, S.L.; Ku, L.P. . September 1991

JAERI-M 91-034. . *Recommended Values of Decay Heat Power and Method to Utilize the Data*. . Tasaka, K.; Katakura, J.; Yoshida, T.; Kato, T.; Nakasima, R. . March 1991

Nucl. Sci. Eng. 109, pp. 1-17. . *An R Matrix Analysis of the 235U Neutron-Induced Cross Sections Up to 500 eV*. . Leal, L.C.; de Saussure, G.; Perez, R.B. . September 1991

Nucl. Sci. Eng. 109, pp. 26-38. . *Modeling of Fission Product Release and Transport for Severe Fuel Damage Analyses*. . Suh, K.Y.; Hammersley, R.J. . September 1991

Nucl. Sci. Eng. 109, pp. 49-75. . *The Pn Theory as an Asymptotic Limit of Transport Theory in Planar Gemetry - I: Analysis*. . Larsen, E.W.; Pomraning, G.C. . September 1991

Nucl. Sci. Eng. 109, pp. 76-85. . *The Pn Theory as an Asymptotic Limit of Transport Theory in Planar Geometry - II: Numerical Results*. . Rulko, R.P.; Larsen, E.W.; Pomraning, G.C. . September 1991

Nucl. Sci. Eng. 109, pp. 86-91. . *Effects of Changing the Random Number Stride in Monte Carlo Calculations*. . Hendricks, J.S. . September 1991

Nucl. Sci. Eng. 109, pp. 92-102. . *Analysis of Beta-Ray Data Important to Decay Heat Predictions*. . Dickens, J.K. . September 1991

Nucl. Technol. 95, pp. 272-286. . *Monte Carlo Methods, Models, and Applications to the Advanced Neutron Source*. . Redmond, E.L., II; Ryskamp, J.M. . September 1991

Nucl. Technol. 95, pp. 337-348. . *Design of a Neutron Gauge for the Detection and Measurement of Water Ingression in Flat Roofs*. . Bonin, H.W.; Thorp, C.J. . September 1991

Phys. Med. Biol. 36, pp. 861-920. . *Monte Carlo Techniques in Medical Radiation Physics*. . Andreo, P. . February 1991

Health Phys. 61, pp. 259-261. . *Shielding a Spectrum of Workloads in Diagnostic Radiology*. . Simpkin, D.J. . August 1991

PSI-Bericht Nr. 55. . *Nucleonic Calculations for Possible Irradiation Experiments in SAPHIR*. . Caro, M.; Pelloni, S. . . January 1990

RADIATION SHIELDING INFORMATION CENTER
SEMINAR-WORKSHOP

Theory and Application of Deterministic Radiation Transport Methods
Week of February 3 ! 7, 1992

Name: _____

Citizenship: _____

Organization: _____

Full Mailing Address: _____

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_____

Phone: _____

FAX: _____

G I plan to attend the seminar on Deterministic Radiation Transport Methods.

G I plan to attend the workshop on the TORT Discrete Ordinates System.

G I plan to contribute a paper on the seminar. I will send a suggested title now, and confirmed title and a 200-word abstract by November 1, 1991. I understand later papers may not be accepted. I will bring a camera-ready manuscript of the full paper to the conference.

Title of paper: _____

_____

_____

A registration fee to cover conference activities and proceedings will be collected at final registration.

Your suggestions for implementation of the above seminar-workshop will be appreciated.

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_____

This form may be Faxed to 615-574-9619 or mailed to

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