RSIC Newsletter

No. 276 November 1987

*The forty-four-hour week has no charm for me. I'm looking for a
forty-hour day.—Dr. Nicholas Murray Butler*

7TH ICRS UPDATE

The *Seventh International Conference on Radiation Shielding (ICRS)*, jointly organized by the OECD Nuclear Energy Agency (OECD/NEA) and the UK Atomic Energy Agency, Winfrith, England, will be held at the Royal Bath Hotel, Bournemouth, United Kingdom (UK), September 12–16, 1988. This is the seventh in a series which began in 1958 at Cambridge, UK, followed by conferences in Studsvik, Sweden (1961), Harwell, UK (1968), Paris (1972), Knoxville, USA (1977), and Tokyo (1983). The conference provides a forum in which specialists can discuss problems and solutions to the challenges presented by radiation transport, waste management, fuel reprocessing and decommissioning, dosimetry, accelerator shielding, industrial and medical use of radionuclides, and environmental impact from the use of radionuclides.

Prospective authors are invited to submit papers on the following topics:

- •Status and current requirements in data for shielding;
- •Advances in calculational techniques—Monte Carlo and deterministic methods, design methods, radiation streaming methods, interfacing of calculational methods;
- •Developments in measurement techniques for use in the laboratory or in nuclear power plants;
- •Current design problems and proposed solutions;
- •Comparison of measurement and calculations on operating nuclear power plants and in benchmark experiments;
- •Sensitivity methods and optimization in shielding;
- •Shielding of shipping casks—design, calculation, and measurement;
- •Dosimetry in reactor pressure vessels: calculations and measurement; and
- •Energy deposition.

Abstracts should be submitted to Enrico Sartori, OECD/NEA Data Bank, Batiment 445, F-91191 Gif-sur-Yvette CEDEX, France. Note the following dates in regard to submitting papers and registration: (a) **December 15, 1987,** is the deadline for receipt of paper submission form and abstract; (b) notification of acceptance of papers will be made *February 26, 1988,* (c) registration forms through appropriate official channels are due *May 15, 1988,* and (d) camera-ready text must reach the organizers by **June 30, 1988.**

ELECTRONIC MAIL USER NOTE

Several electronic mail networks are now available to RSIC and its user/contributors. Perhaps the major consideration for using this method of communication is the speed of transmitting information. Yet, the gain is often lost because the return information needed to ensure a timely reply is not reported.

Include your full name, installation address, and electronic mail address and help us do our job more efficiently and responsively. We receive messages with just the first name, or no installation, no country, etc. It takes time for RSIC personnel to determine from the few clues given who sent the message and where to send the reply.

CHANGES TO THE COMPUTER CODE COLLECTION

Five changes were made to the computer code collection during the month: a new code system was added to the collection, an existing code package was extended with a PC version, and three existing code packages were updated.

CCC-371/ORIGEN2

An IBM PC version of this isotope generation and depletion code system was provided by Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee. The ORIGEN2 computer code system calculates the buildup, decay, and processing of radioactive materials using a matrix exponential method to solve a large system of coupled, linear, first-order ordinary differential equations with constant coefficients. **This version, designated CCC-371D, is recommended only for users with considerable previous experience running ORIGEN2 on a mainframe.** Detailed documentation for the novice user is not provided. Running the IBM PC (D) version requires a PC, XT, or AT with fixed disk, one high density disk drive, 640K of installed RAM memory, and an 8087 or 80287 numeric coprocessor chip. The sample problem took about 2 hours on an IBM PC AT. The IBM PC version was compiled with MicroSoft FORTRAN Version 3.31 under PC DOS. Three 5.25-in. **high density** diskettes are required for the D version; 809K, 577K, and 1.1M bytes. References: ORNL/TM-7175 (July 1980), *Nucl. Technol.* **62**, 335 (September 1983), and Informal Notes (December 1985, January 1985, October 1981). FORTRAN; IBM 360/370, CDC, and VAX (A), UNIVAC 1100 (B), PRIME 400 (C), and IBM PC (D).

CCC-467/ITS

The machine-independent emulator of the CDC UPDATE code, UPEML, was removed from version 2.0 of this integrated TIGER series of coupled electron/photon Monte Carlo transport codes from Sandia National Laboratories, Albuquerque, New Mexico. PSR-245/UPEML (Version 2.0) is now provided as a stand-alone package (see October 1987 *RSIC Newsletter*). **Requesters of version 2.0 of ITS should also request PSR-245.** References: Sandia National Laboratories Memo (April 29, 1987), SAND 84-0573 (November 1984), and Informal Notes (1987). FORTRAN-77; CRAY, CYBER-76, IBM 3081, CRAY-1, VAX.

CCC-511/TRISTAN

This multigroup three-dimensional direct integration method radiation transport analysis code system was contributed by the Department of Nuclear Engineering, University of Tokyo, Japan. The TRISTAN code solves three-dimensional, fixed-source, multigroup Boltzmann transport equations for neutron or gamma rays in rectangular geometry; forward and adjoint solutions are possible. TRISTAN is suitable for analyzing radiation streaming and deep penetration problems; it cannot be used for criticality calculations. The solution method is direct integration, a method suitable for radiation shielding problems because of its exactness in the treatment of the streaming term of the transport equation. A numerical integration of double-differential cross sections is applied to represent precisely the anisotropic scattering instead of using the Legendre polynomial expansion. TRISTAN includes several techniques such as a separation of the flux into the scattered and unscattered components and a conservation of radiation flux restored by a balance equation. Forty-two- and fifty-group cross-section libraries are included. Reference: UTNL-R 204 (March 1987). FORTRAN 77; HITAC M-280

PSR-63/AMPX-II and PSR-117/MARS

In order to provide corrected AMPX modules needed to accomodate the newly-frozen version of DLC-113C/VITAMIN-E (see announcement in this Newsletter), both of these packages were updated by ORNL. The updates consist of providing a corrected version of AIM and adding the BONAMI-S module from CCC-466/SCALE3.1. The replacement of BONAMI was recommended because of improved interpolation schemes in the

SCALE version. The LAVA module was corrected to produce ANISN ID records consistent with commonly used conventions. Assembler routines which eliminate track-length dependencies of random access I/O routines were added for use with 3380 disk drives on IBM systems. All these changes are the result of user interactions with DLC-113/VITAMIN-E and we appreciate this helpful feedback. References: ORNL/TM-3706 (March 1976), ORNL/CSD/TM-72 (January 1979), and selected pages from NUREG/CR-0200, Vol. 2, Sec. F1 (October 1981). FORTRAN IV, Assembler Language; IBM 3033.

CHANGE TO THE DATA LIBRARY COLLECTION

An existing data library was updated by the developers.

DLC-113/VITAMIN-E

This 174n, 38g cross-section library in AMPX format was revised by the contributors at ORNL. The data library is particularly suited to fast reactor, fusion neutronics, defense applications, and, in general, for radiation transport problems where thermal upscatter is not important. It can be used to derive application-dependent broad group data libraries from the fine-group master library. The current update consists of a regeneration of the card image master neutron libraries with a corrected version of AIM to eliminate magic word problems encountered by some users. The reaction cross sections for REV2 of the ENDF/B-V Special Purpose Files were rerun and all data were processed through NITAWL and WORM to produce AMPX masters which have resonance contributions added to background data. LAPHNGAS runs were repeated to correct minor errors due to using a slightly incorrect group boundary value. New data for Fe, I-127, Cs-133, and Pt were processed with MINXI5. Sample problem runs can be made using the AMPX modules from PSR-63/AMPX-II or PSR-117/MARS, both of which have been updated recently with new versions of AIM and BONAMI (see announcement this Newsletter). Those requesting DLC-113C should also get the updated AMPX-II or MARS. A full reel of magnetic tape written at 6250 bpi or four full reels written at 1600 bpi are needed to get the DLC-113C package. Reference: Draft ORNL-RSIC Report (August 1984). EBCDIC card or print images; 1,365,968 records.

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.

Lucius, AMPX and FORSS Developer Dies

James (Jim) L. Lucius, long-time RSIC friend and colleague, died October 27, 1987, in Knoxville, Tennessee.

Jim's work on AMPX and FORSS development is recognized throughout the international shielding community. Lucius joined the staff of the Computing Technology Center at the Oak Ridge Gaseous Diffusion Plant in 1956, and spent his 32-year career working in the Oak Ridge facilities. An applied mathematician, Jim was a Section Head in the Nuclear Code Development Section at the time of his death. His software development activities were initially in the diffusion theory codes used in reactor design analysis. He later developed modules for the AMPX cross section processing system and the FORSS sensitivity analysis system. His most recent software work focused on artificial intelligence.

Thompson Named to New LANL Post

W. L. "Buck" Thompson has taken a position as program director for computational science at Los Alamos National Laboratory. The position was created in response to a recommendation by the Computational Science Task Force to provide coordination of computational science efforts throughout the laboratory.

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.

ISRP-4 Notes

The call for papers for the *4th International Symposium on Radiation Physics was announced in a previous (September 1987) issue of the RSIC Newsletter.* Note that the deadline for submission of abstracts is **May 15, 1988,** not June 15. Oral sessions of invited papers and poster sessions of contributed papers are requested for the following topics: Fundamental Processes in Radiation Physics; Radiation Sources, Detectors, and Dosimetry; Uses of Radiation in Fundamental Research; Radiation in Biomedicine and Environmental Science; Radiation in Technology; and Radiation in Energy Research. Contributions may be submitted to Prof. Ivan C. Nascimento, University of São Paulo, Caixa Postal 20516, São Paulo, Brazil. The U.S. contact for the conference is Richard Pratt, Dept. of Physics, University of Pittsburgh, Pittsburgh, PA 15260 (phone 412-624-9052). Full information is available from the Congress Secretariat: Marianne Kaphan Sarcinella, Rua Augusta, *2516-2°* Andar-Cj 22. 01412 São Paulo, Brazil (phone 011-881-7388; Telex: 011-38372SPZF).

Calendar

Your attention is directed to the following additional events of interest.

December 1987

4th International Symposium on the Natural Radiation Environment, Dec. 7-11, 1987, Lisbon, Portugal, sponsored by the U.S. Dept. of Energy and the Commission of the European Communities. Contact: J. Sinnaeve, DG XII-D-4, SDM 264, Rue de la Loi, 200 B-1049, Brussels, Belgium (phone 02-235-5211).

January 1988

X-Ray and VUV Interaction Data Bases, Calculations, and Measurements, January 10-15, 1988, Los Angeles, California, sponsored by the International Society for Optical Engineering. Contact: SPIE Technical Program Committee/O-E/LASE'88, P.O. Box 10, Bellingham, WA 98227-0010 USA (206-676-3290).

12th Nuclear Physics Conference, Jan. 24-29, 1988, Sydney, Australia, sponsored by the Australian Institute of Nuclear Science and Engineering. Contact: J. Watson, Conf. Secretary, Australian Inst. of Nucl. Sci. & Engr., Private Mail Bag, P.O. Sutherland, NSW 2232, Australia.

February 1988

Waste Management '88: Symposium on Radioactive Waste Management, Feb. 26-Mar. 3, 1988, Tucson, Arizona, sponsored by the University of Arizona. Contact: M. Wacks, Dept. of Nuclear and Energy Engineering, University of Arizona, Tucson, AZ 85721 (phone 602-621-2475).

March 1988

24th Annual Meeting of the National Council on Radiation Protection and Measurements, Mar. 30-31, 1988, Washington, D.C. The principal session is "Radon." Contact: NCRP, 7910 Woodmont Ave., Suite 1016, Bethesda, MD 20814.

April 1988

Workshop on Non-ionising Radiation Biological Effects, Protection and Standards, Apr. 5-8, 1988, Melbourne, Australia. Contact: J. C. Button, Scientific Secretary, IRPA 7, Health and Safety Div., Australian Atomic Energy Commission, Private Mail Bag, Sutherland, NSW 2232 Australia.

Seventh International Congress of the International Radiation Protection Association (IRPA 7), Apr. 10-17, 1988, Sydney, Australia. Contact: J.C.E. Button, Scientific Secretary, IRPA 7, Health & Safety Div., Australian Atomic Energy Commission, Private Mail Bag, Sutherland, N.S.W. 2232, Australia (phone 61-2-543-3295) (Telex: AA.24562).

International Symposium on Fusion Nuclear Technology, Apr. 10-19, 1988, Tokyo. Contact: Kenzo Miya, Nuclear Engineering Research Lab., University of Tokyo, Tokai-mura, Ibaraki Prefecture, 319-1 Japan (phone 011-813-812-211 ext 7421) or Mohamed Abdou, University of California-Los Angeles (phone 213-206-1228).

International Conference on Radiation Protection Principles in Nuclear Energy, Apr. 18-22, 1988, Sydney, Australia, sponsored by the IAEA. Contact: W. Porter, IE-13, U.S. Dept. of Energy, Forrestal, Washington, DC 20585 (phone 202-252-4573).

May 1988

Safety of Next Generation Power Reactors, May 1-6, 1988, Seattle, Washington, sponsored by the ANS Reactor Physics, Reactor Operations, Human Factors, and Fuel Cycle and Waste Management Divisions, and the U.S. DOE. Contact: Robert Ferguson, Ferguson & Assoc., 7601 W. Clearwater, Suite 450, Kennewick, WA 99336 (phone 509-783-1446).

3rd Topical Meeting on Tritium Technology in Fission, Fusion, and Isotopic Applications, May 1-6, 1988, Toronto, Canada, sponsored by the Canadian Nuclear Society and the American Nuclear Society. Contact: C.

D. Burnham, CFFTP, 2700 Lakeshore Road, West, Mississauga, Ontario, Canada, L5J 1X3 (phone 416-823-6364) or Harold Anderson, Monsanto Research Corp., P.O. Box 32, Miamisburg, OH 45342 (phone 513-865-3062).

International Symposium on the Management of Low and Intermediate Level Radioactive Wastes, May 16–20, 1988, Stockholm, Sweden, sponsored by the International Atomic Energy Agency. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

International Conference on Nuclear Data for Science and Technology, May 30–June 3, 1988, Mito, Japan, sponsored by the Japan Atomic Energy Research Institute. Contact: Sin-iti Igarasi, Conference Secretariat, Nuclear Data Center, JAERI, Tokai-mura, Naka-gun, Ibaraki-ken 319-11 Japan (phone 0292-82-5480).

June 1988

International Conference on Computational Physics (ICCP), June 1–5, 1988, Beijing, sponsored by the Institute of Applied Physics and Mathematics, Beijing, and Drexel University, Pennsylvania. Contact: Zhang Tianyuan, IAPCM, P.O. Box 8009, Beijing, China (PRC) or D. H. Feng, Department of Physics and Atmospheric Science, Drexel University, Philadelphia, PA 19104 USA.

American Nuclear Society Annual Meeting, June 12–17, 1988, San Diego, California. Contact: ANS, Meetings Dept., 555 North Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

September 1988

Industrial Radiation and Radioisotope Measurement Applications, Sept. 6–8, 1988, Pinehurst, North Carolina, a topical meeting sponsored by the Isotopes and Radiation Division of the ANS. Contact: Robin P. Gardner, General Chairman, or Kuruvilla Verghese, Tech. Program Chairman, North Carolina State Univ., School of Engineering, Box 7909, Raleigh, NC 27695-7909.

International Topical Meeting on Waste Management, Sept. 11-15, 1988, Pasco, Washington. Contact: Bill Bonner, Pacific Northwest Laboratory, P.O. Box 999, Richland, WA 99352 (phone 509-376-5451 or FTS 444-5451).

7th International Conference on Radiation Shielding (ICRS), Sept. 12–16, 1988, Bournemouth, United Kingdom, sponsored by the OECD Nuclear Energy Agency and the UK Atomic Energy Agency. Contact: A. K. McCracken, UKAEA Winfrith, Dorchester, Dorset, DT2 8DH, UK or Leo LeSage, Argonne National Laboratory, Argonne, IL 60439 (phone 312-972-6048).

11th International CODATA Conference, "Scientific and Technical Data in a New Era," Sept. 26–29, 1988, Karlsruhe, Fed. Rep. of Germany. Contact: DECHEMA, ATTN: CODATA Conference, P.O. Box 97 01 46, D-6000 Frankfurt/M. 97, Fed. Rep. of Germany (phone 069 7564 241/242/243; Telex: 412490 dcha d.).

October 1988

4th International Symposium on Radiation Physics (ISRP-4), Oct. 3–7, 1988, São Paulo, Brazil. Contact: Prof. Ivan Cunha Nascimento, ISRP-4 Chairman of the Organizing Committee, Inst. de Fisica-Universidade de São Paulo, Caixa Postal 20516 (TELEX: 011-37920 IF SP -1498-São Paulo-SP-Brazil).

5th National Conference on Biomedical Physics and Engineering, Oct. 15–17, 1988, Sofia, Bulgaria. Contact: M. Markov, Department of Biophysics, Biological Faculty, Sofia University, 8, Dragan Tzankov Blvd., Sofia 1000, Bulgaria.

OCTOBER ACCESSION OF LITERATURE

The following literature cited has been ordered for review, and that selected as suitable will be placed in the RSIC Information Storage and Retrieval Information System (SARIS). This early announcement is made as a service to the shielding community. Copies of the literature are not distributed by RSIC. They may generally be obtained from the author or from a documentation center such as the National Technical Information Service (NTIS), Department of Commerce, Springfield, Virginia 22161.

RSIC maintains a microfiche file of the literature entered into SARIS, and duplicate copies of out-of-print reports may be available on request. Naturally, we cannot fill requests for literature which is copyrighted (such as books or journal articles) or whose distribution is restricted.

This Literature is on order. It is not in our system. Please order from NTIS or other available source as indicated.

RADIATION SHIELDING LITERATURE

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BMI/ONWI-588, . . *Evaluation of Regulatory Guides Potentially Useful to Geologic Repository Development.,* . . Chang, W.Y., . . January 1986, . . NTIS, PC A11/MF A01

BMI/ONWI-638, . . *Determination of Background Radiological Characteristics Within the Palo Duro Basin, Texas.,* . . NUS Corporation, . . April 1987, . . NTIS, PC A05/MF A01

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CINDA 87 (1982-1987), . . *The Index to Literature and Computer Files on Microscopic Neutron Data.,* . . IAEA, . . May 1987, . . International Atomic Energy Agency, Vienna

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