RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE U.S. DEPARTMENT OF ENERGY

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Information analysis is an aggressive search for new ways of looking at things. . . .Homer Hall

DEATH OF PROFESSOR T. SHIMANOUCHI NOTED

Professor Takehiko Shimanouchi, a leader of reference data activities in Japan for many years, died suddenly on May 19, 1980. He served as Japan's delegate to CODATA and was in the final stages of preparing the program for the 7th International CODATA Conference. Shimanouchi had an active research career in molecular spectroscopy at the University of Tokyo. He was an early leader in the application of digital computers to molecular vibration problems and in the development of molecular force fields for prediction of fundamental vibrational frequencies. His work on the infrared and Raman spectra of polymers has had major influence in the field. In 1967 he prepared the first of a long series of compilations, Tables of Molecular Vibrational Frequencies, which have appeared as NSRDS publications. In recent years he became interested in general problems of computer-based storage and dissemination of data and helped initiate a number of such activities in Japan.

STAFF MEMBER IN FAR EAST

Betty F. Maskewitz, Engineering Physics Information Centers (EPIC) Director, is in the Far East on an information exchange visit with scientists and engineers in Japan, Korea, and Taiwan. She will present a paper at the CODATA Conference in Tokyo, hold discussions at Kyoto University, and visit with members of the Japanese radiation protection, transport and shielding scientists in Tokyo, Tokai-mura, and other research sites through meetings arranged by the Japan Atomic Energy Research Institute (JAERI) and the Atomic Energy Society of Japan. Immediately following, she will participate in similar discussions in meetings arranged by the Korean Atomic Energy Research Institute (KAERI) in Seoul and the Institute of Nuclear Energy Research (INER), Taipei, Taiwan.

Ms. Maskewitz will return November 1, 1980.

CHANGES IN THE COMPUTER CODE COLLECTION

The following changes were made in September.

CCC-357/AIRDOS-EPA

The AIRDOS-EPA code package was updated to correct an error called to RSIC attention by B. Baer of Westinghouse, Albuquerque, NM and D. Fields of Oak Ridge National Laboratory (ORNL). The program was developed at ORNL for the U.S. Environmental Protection Agency as part of a methodology to evaluate health risks to man from atmospheric radionuclide releases.

CCC-383/DWNWND

The interactive Gaussian plume atmospheric transport model was contributed by the Oak Ridge National Laboratory, Oak Ridge, Tennessee. The user may specify any one of eight different sets of empirically determined dispersion parameters. Using the selected dispersion parameters, ground-level

normalized exposure estimates are made at any specified downwind distance for the plume centerline and for the 22.5° sector average. Computed values may be corrected for plume depletion due to deposition and for plume settling due to gravitational fall. Reference ORNL/TM-6874. FORTRAN IV; PDP-10.

CCC-386/FPGAM

FPGAM, developed to calculate fission-product gamma-ray spectrum, was contributed by Japan Atomic Energy Research Institute (JAERI), Tokyo, Japan. The calculation is based on the amount of fission product produced as calculated by the DCHAIN code (CCC-370), taking into account reactor power history and cooling time. In addition to doing a direct calculation of the fission product gamma-ray spectrum, the code can calculate the response function of the gamma-ray semiconductor detector. Reference OLS-880-244. FORTRAN IV; FACOM 230-75.

CCC-389/CYLDOS

CYLDOS, a cylindrical geometry gamma-ray flux attenuation code, was contributed by the United Kingdom Atomic Energy Authority, Risley, Warrington, England, through the OECD NEA Data Bank, Gif-sur-Yvette, France. Developed for the purpose of finding dose rates and gamma-ray spectra at specified points arising from an assembly of cylindrical sources and shields, the code will calculate gamma-ray fluxes throughout a shield which can be represented by an array of parallel cylinders. The cylindrical regions may have gamma-ray sources within them. Point kernel integration is used. Scattering of the gamma rays by source and shield materials is treated by the inclusion of Taylor buildup coefficients within the expressions for the dose rate. Reference: TRG Memo 7506 (R). FORTRAN IV; IBM 360.

PSR-78/FORSIM VI

FORSIM, a FORTRAN-oriented simulation package for the automated solution of partial and ordinary differential equation systems, has been replaced by a newly frozen version, FORSIM VI, supplied by Chalk River Nuclear Laboratories, Chalk River, Ontario. The new FORSIM VI is more versatile than former versions, with new features, including new integration algorithms and three-dimensional capabilities. Reference: AECL-5821. FORTRAN IV; CDC 175/6600.

PSR-93/PUFF2

The IBM version (A) of PUFF, the determination of multigroup covariance matrices from ENDF/B uncertainty files, has been replaced by a newly frozen version supplied by Oak Ridge National Laboratory. The version, PUFF2, is the uncertainty processor for ENDF/B-V data. The CDC version of the package was not affected by this update. Reference: ORNL/TM-7389. FORTRAN IV; IBM 360.

PSR-140/FANG

FANG (Fold with Angle), an angular folding code package for channel theory analysis, has been extended to include a CDC version which was contributed by Century Research Center Corporation, Tokyo, Japan. FANG calculates the "contributon flux" and "contributon leakage" necessary for performing "channel theory" analysis by using information available on a DOT scalar flux tape, provides 3-D plots of streaming channels, performs space-energy dependent folding, and computes 2-D angular fluxes by expanding DOT flux moments.

SCA-0/SCALE (CSAS1, CSAS2)

SCALE, a modular code system for performing standardized computer analyses for licensing evaluation, was updated to correct an error in Subroutine POSIT of KENO IV. Information for the correction was furnished by the ORNL contributors. A mailing has been made informing current users of the program.

CHANGES IN THE DATA LIBRARY COLLECTION

The following change was made in September.

DLC-78/JIMCOF

JIMCOF, a multigroup constants file based on ENDF/B-IV data, was contributed by Japan Atomic Energy Research Institute (JAERI). The file contains 68 groups in the fast-neutron energy region and 50 groups in the thermal-neutron energy region, making total data for about 100 nuclides. A processing program is included in the package. Reference: JAERI-M 6972. FORTRAN IV; FACOM 230-75.

VISITORS TO EPIC

The following persons came for an orientation visit and/or to use EPIC facilities during the month of September.

Victor Cain, Science Applications, Inc., Oak Ridge, TN; **James Cape**, DOE Technical Information Center, Oak Ridge, TN; **Mary L. Daugherty**, ORNL Information Division, Oak Ridge, TN; **Homer Hall**, Rutgers University, Cranford, NJ; **Robert Paylor**, 3M Company, Knoxville, TN; **Ralph P. Romanelli**, Ballistic Research Laboratory, Aberdeen Proving Ground, MD; **R. Shankar Singh**, Reactor Research Centre, Kalpakkam, India; **Alton C. Williams**, Alabama A & M University, Huntsville, AL; and **Hitoshi Yokobori**, Mitsubishi Atomic Power Industries, Inc., Omiya, Saitama, Japan.

PERSONAL ITEMS

Christian S. Tapia is spending a semester in RSIC under sponsorship of the Great Lakes College Association and Associated Colleges of the Midwest. Chris' main project will be to implement a gamma-ray Monte Carlo transport code on the RSIC Data General ECLIPSE computer and solve several research problems.

The following change of address has been noted: **Jess Greenborg** *from* Battelle Pacific Northwest Lab., Richland, WA *to* GPU Service Corporation, Three Mile Island Nuclear Plant, Middletown, PA.

AFFILIATION CORRECTION

The affiliation of Charles W. Kee, who has long been associated with the ORIGEN code, was given incorrectly in the September Newsletter. His correct affiliation is the Operations Analysis and Planning Division, Oak Ridge Gaseous Diffusion Plant, Union Carbide Nuclear Division.

ANS/ENS/AIF INTERNATIONAL CONFERENCE

The Winter meeting of the American Nuclear Society, European Nuclear Society, and Atomic Industrial Forum will be held in Washington November 16-21, 1980. The theme is "World Nuclear Energy—Accomplishments and Perspectives."

Plenary sessions will be held in the mornings and technical sessions in the afternoon. Special sessions of particular interest to the radiation protection and shielding community include: Radiation Protection Design Impact—The Nuclear Industry Response to TMI (Mon. pm), Fusion for the 1980s—The Breakeven Decade (Tues. pm), TMI-2 Krypton Releases and Measurements (Wed. pm), Considerations in the Validation/Verification of Large, Complex Computer Codes (Wed. pm), Setting Acceptable Risk Criteria and Decision-Making (Wed. pm), and Realistic Estimates of the Consequences of Nuclear Accidents (Thurs. pm). Other sessions sponsored by the Radiation Protection and Shielding Division include: Radiation Protection (Tues. pm), Advances in Methods and Data for Shielding (Tues. pm), and Shielding and Radiation Transport Applications (Wed. pm).

UT MONTE CARLO THEORY WORKSHOP PLANNED

A five-day workshop is being offered by the Nuclear Engineering Department of the University of Tennessee, Knoxville, as a part of Tennessee Industries Week (TIW), December 15–19, 1980. This year's course will emphasize the theory of Monte Carlo as would be required of the effective use and understanding of Monte Carlo computer codes. Topics will include an in-depth study of transport theory as it applied to Monte Carlo analyses, Monte Carlo estimation techniques, statistical uncertainty and the general problem of variance reduction, albedo calculations, and many topics of current interest. Special attention will be given to the **adjoint** mode of analysis and related special topics such as contributon theory, adjoint-difference methods, and combined (forward-adjoint) modes of analysis. The computer code MORSE will be described and will be used to illustrate related theories. Registration fee is $525.00.

For more information (and to register), call or write the College of Engineering, The University of Tennessee, 124 Perkins Hall, Knoxville, TN 37916; 615-974-5321.

ACM 1980 CONFERENCE ANNOUNCED

The ACM 1980 Conference will be held in Nashville, TN, October 27–29, 1980, with Dr. Alvin Weinberg giving the keynote speech. Dr. Weinberg will speak on "The Interaction Between Information and Energy Systems." More than 45 technical sessions will be featured, with the 11th ACM North American Chess Championship and many other special sessions and exhibits.

For further information, contact Charles L. Bradshaw, ACM '80 Conference Chairman, Box 1980, Station B, Nashville, TN 37235, (615-322-2951).

ANS-SPONSORED UPCOMING MEETINGS

The following is a list of meetings approved by the Program Committee of the American Nuclear Society. If you have questions regarding a conference, please contact the individual named in the announcement, or contact David G. Pettengill, ANS Meetings Manager, American Nuclear Society, 555 North Kensington Avenue, La Grange Park, IL 60525, (312) 352-6611.

November 1980

6th International Symposium on Packaging & Transportation of Radioactive Materials, November 10–14, 1980, Berlin, Germany. Contact: R. B. Pope, Sandia Labs, TST Division, Albuquerque, NM 87115; 505-844-5445.

ANS/ENS International Conference, November 16–21, 1980, Sheraton-Washington, Washington, D.C. Contact: J. Ohanian, Dean of Research, College of Engineering, University of Florida, 300 Weil Hall, Gainesville, FL 32611; 904-392-0941.

December 1980

Atomic & Nuclear Methods in Fossil Energy Research, December 1–4, 1980, Mayaguez-Hilton, Mayaguez, PR. Contact: Stephen Carpenter, National Bureau of Standards, Activation Analysis, Gaithersburg, MD 20234; 301-921-2167.

February 1981

Waste Management 1981, February 22–26, 1981, Tucson, AZ. Contact: Morton Wacks, Associate Editor, University of Arizona, Tucson, AZ 85721; 602-626-3205.

April 1981

ANS/ENS International Topical Meeting on Advances in Mathematical Methods for the Solution of Nuclear Engineering Problems, April 27–29, 1981, Munich, Germany. Contact: Manfred R. Wagner, Kraftwerk Union AG, Postfach 3220, Dept. R121, D 8520 Erlanger, F.R. Germany.

June 1981

ANS Annual Meeting, June 7–12, 1981, Sheraton-Bal Harbour, Miami Beach, Florida. Contact: Nils Diaz, Nuclear Science Center, University of Florida, Gainesville, FL 32611; 904-392-1406.

October 1981

9th Symposium on Engineering Problems in Fusion Research, October 25–29, 1981, Palmer House, Chicago, IL. Contact: George H. Miley, Nuclear Engineering Program, University of Illinois, 214 Nuclear Engineering Lab., Urbana, IL 61801.

November 1981

ANS Winter Meeting, November 29–December 4, SF Hilton, San Francisco, CA. Contact: Jon Stouky, Quadrex NSC, 1700 Dell Ave., Campbell, CA 95008; 408-446-2500.

June 1982

ANS Annual Meeting, June 6–11, 1982, LA Bonaventure, Los Angeles, CA. Contact: Gene Cramer, Southern California Edison, PO Box 800, Rm. 447, Rosemead, CA 91770; 213-572-2784.

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 22151.

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.

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Skyshine Spectra of Gamma Rays., Swarup, J., 1980, Bhabha Atomic Research Centre, Bombay, India

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Review of the Different Methods to Derive Average Spacing from Resolved Resonance Parameter Sets., Fort, E.; Derrien, H.; Lafond, D., December 1979, CNEN Centre, Bologna, Italy

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