RSIC Newsletter

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*Never tell a young person that something can not be done. God may
have been waiting for centuries for somebody ignorant enough of the
impossible to do that thing.—Dr. J. A. Holmes*

RSIC PRODUCTS UNDER STAFF REVIEW

Several code packages have been obsoleted because of the availability of newer, more modern technology. CCC-467/ITS 2.1 provides state-of-the-art technology for solution of linear time-integrated coupled electron/photon radiation transport problems and eliminates the need for early versions of packages on which the integrated TIGER series is based. The following code packages have been removed: CCC-173/ZEBRA-1, CCC-218/EZTRAN, CCC-245/TIGER, CCC-280/CYLTRAN, CCC-308/SPHERE, CCC-373/TIGERP, and CCC-374/ACCEPT.

CHANGES TO THE COMPUTER CODE COLLECTION

Four changes were made to the computer code collection during the month. Two new code systems were packaged and added to the collection, the documentation for one code package was updated, and an existing code package was replaced with a new version. One change resulted from a contribution from Japan.

PSR-137/MARLOWE

Update Bulletins for this code for the simulation of atomic-displacement cascades in solids in the binary collision approximation are provided periodically by the contributors at Oak Ridge National Laboratory (ORNL). An Update Bulletin describes cumulative changes. The latest Update Bulletin 5.1, dated 20 January 1989, is available upon request from RSIC. This revision corrects two typographical errors of Update Bulletin 5. References: Informal User's Guide; *Phys. Rev. B*, 9 (12), p 5008 (1974).

PSR-202/MCVIEW

The MCVIEW code system was contributed by the Japan Atomic Energy Research Institute (JAERI), through the OECD Nuclear Energy Agency Data Bank, Gif-sur-Yvette, France. MCVIEW calculates the radiation view factor between surfaces for three dimensional geometries using Monte Carlo methods. It was developed to calculate view factors for input data to heat transfer analysis programs such as SCA-03/TRUMP, SCA-01/HEATING5 and PSR-199/HEATING6. Reference: JAERI-M 86-1977 (Dec. 1986). FORTRAN 77 and assembler; IBM 3090.

PSR-231/GRESS 0.1

A newly frozen version of this gradient enhanced software system was contributed by ORNL. It is recommended that users of GRESS 0.0 request the new version, designated GRESS 0.1, which repre-

sents corrections to "bugs" in the previous release. The GRESS FORTRAN precompiler and run-time library are used to enhance conventional FORTRAN programs with analytic differentiation of arithmetic statements. A majority of ANSI X3.9-1978 standard FORTRAN 77 is accepted. The enhanced code will calculate partial derivatives for real variables on the left-hand side with respect to real variables on the right-hand side for each equation. The user inserts application dependent subroutine calls to process the partial derivatives. By calling GRESS run-time routines, derivatives can be propagated through the code via the chain rule or written to disk for adjoint matrix generation. After the user has inserted the appropriate calls, the enhanced code is compiled, linked, and executed. GRESS is operable on the VAX family of computers running the VMS operating system. The package is distributed on one 5¼-indouble-sided, double-density diskette (DS/DD). Reference: ORNL/TM-10835 (October 1988). FORTRAN 77 and C; VAX.

PSR-273/FERD-PC

This interactive multichannel neutron and gamma-ray spectrum matrix unfolding code system, contributed by ORNL, is a modified version of FERD, which is included in PSR-102. Several changes were made to include an interactive binning code, a flux integration code, and a plotting utility. FERD-PC solves the integral equation which relates a measured pulse-height distribution and associated uncertainties to the true energy spectrum of the incident radiation. The mathematical method of FERD-PC differs from FERD only in that FERD-PC assumes no uncertainty in the response matrix, while FERD allows additional uncertainty by means of an upper and lower response matrix. FERD-PC compiles using the Microsoft FORTRAN (Version 4.01) compiler, and PLOTFERD uses Microsoft Quickbasic compiler. PLOTFERD requires an HP 7475A or equivalent plotter. The package is available on one DS/DD 5.25-in. diskette. Reference: ORNL/TM-11028 (April 1989). FORTRAN 77 and Basic; IBM PC.

ANS Standards Report Released

The 1988 American Nuclear Society Standards Committee Report of Activities presents a record of the committee's activities and summarizes its accomplishments of the past year. Seventeen standards were approved, two projects were withdrawn, and consensus committees have balloted or continued work to achieve approval on one new proposed standard, nine revisions, and ten reaffirmations in 1988.

The report includes information on scopes and rosters for groups whose projects are under development; subcommittee and working group chairmen reports; information on ANS standards projects under development, revision, or reaffirmation; and a listing of approved American National Standards published by ANS.

The report is available for $10 from ANS, 555 N. Kensington Ave., La Grange Park, IL 60525. Complimentary copies will be sent to standards committee members upon request.

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.

Data for Discovery

The theme for the 12th International CODATA Conference is "Data for Discovery." The conference will be held July 15–19, 1990, at the Hyatt on Capitol Square Hotel, in Columbus, Ohio. The International Council of Scientific Unions (ICSU) Committee on Data for Science and Technology emphasizes the importance of collecting, organizing, and analyzing large data sets. Papers on the following major themes are requested: Prediction of Global Change; Spatial Databases; Materials Data Systems; Expert Systems and Other Knowledge Tools;

Trends in Integration of Information Across Biology; and Impact of New Technology on Data Handling. Submit a 500-word abstract to the Program Committee Chairman, Dr. Margaret E. Courain, 420 Harding Drive, South Orange, New Jersey 07079 USA, by **August 31, 1989**.

Calendar

Your attention is directed to the following events of interest.

July 1989

Radioactive Material Transportation Workshop, July 31–Aug. 3, 1989, Kennewick, Washington. Contact: Teresa Yearwood, SAIC, P.O. Box 2501, Oak Ridge, TN 37831 (phone 615-482-9031 ext. 403).

August 1989

Computational Methods in Reactor Analysis, a short course offered by the University of Tennessee-Knoxville, Aug. 14–18, 1989, during the Tennessee Industries Week (TIW), in Knoxville. Contact: T. W. Kerlin, Head of the Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

Monte Carlo Analysis, a short course offered by the University of Tennessee-Knoxville, Aug. 14–18, 1989, during the Tennessee Industries Week (TIW), in Knoxville. Contact: T. W. Kerlin, Head of the Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

International Nuclear Physics Conference, Aug. 20–26, 1989, São Paulo, Brazil, sponsored by the International Union of Pure and Applied Physics. Contact: Universidade de São Paulo, Departamento de Fisica Nuclear, Caixo Postal 20516, 01498 São Paulo, SP, Brazil.

11th Annual DOE Low-Level Waste Management Conference, Aug. 22–24, 1989, Pittsburgh, Pennsylvania. Contact: Marjorie Clearwater, EG&G Idaho, Low Level Waste Program, MS-2411, Box 1625, Idaho Falls, ID 83415 (phone 208-526-9197).

September 1989

Practical Radiation Shielding, Sept. 5–8, 1989, a short course offered by Shonka Research Assoc., Inc., and Georgia Institute of Technology. Contact: Education Extension-R, Georgia Inst. of Technology, Atlanta, GA 30332-0385 (phone 404-894-2400).

International Hazardous Waste Conference, Sept. 10–13, 1989, Pittsburgh, Pennsylvania, sponsored by the NUS Corporation. Contact: Marilyn Doethorn, NUS Corp., Park West Two, Pittsburgh, PA 15275 (phone 800-245-2730 or 412-788-1080).

International Meeting on Neutron Activation Cross Section for Fission and Fusion Energy Applications, Sept. 11–15, 1989, Argonne, Illinois, sponsored by IAEA. Contact: Phyllis Michaels, EPD, Argonne National Laboratory, 9700 South Cass Ave., Argonne, IL 60439.

4th Annual Hazardous Waste and Hazardous Materials Management Conference and Exhibition, Sept. 12–14, 1989, sponsored by the Institute for International Research, Inc. Contact: Rachelle Scheinbach, HAZTECH International, 13555 Bel-Red Road, C-96870, Bellevue, WA 98009 (phone 800-648-7644 or 206-746-4173).

Nuclear Waste Isolation in the Unsaturated Zone: FOCUS '89, Sept. 18–21, 1989, Las Vegas, Nevada, sponsored by the ANS. Contact: D. Burton Siemmons, University of Nevada-Reno, School of Mines, LME 400, Reno NV 89557-0047 (phone 702-784-6067) or Joy H. Fiore, Science Applications International Corp., 101 Convention Center Drive, Suite 407, Las Vegas, NV 89109 (702-794-7639).

International Workshop on New Developments in Occupational Dose Control and ALARA Implementation at Nuclear Power Plants and Similar Facilities, Sept. 18–21, 1989, Brookhaven National Laboratory, Upton, New York. Contact: Dr. John W. Baum, BNL ALARA Center, Bldg. 703M, Upton, NY 11973 (phone 516-282-4214).

Seminar on Radioactivity Transfer During Food Processing and Culinary Preparation, Sept. 18–21, 1989, Cadarache, France, sponsored by the Commission of the European Communities (CEC). Contact: G. Gouvras, CEC, DG XI/A/1, Jean Monnet Building, C4/46, L-2920 Luxembourg (phone 4301-2718/2730).

Simulation Fidelity Workshop III, Sept. 19–21, 1989, US Air Force Academy, Colorado, sponsored by the

Defense Nuclear Agency, the Department of Energy, and Sandia National Laboratories. Contact: Paul Caldwell, Technical Coordinator, DoD Nuclear Information Analysis Center, 2560 Huntington Ave., Suite 500, Alexandria, VA 22303 (phone 703-960-4774).

EGS4 Course, Sept. 25–28, 1989, Middlesex, England, sponsored by the National Physical Laboratory. Contact: Dr. S. Duane, National Physical Laboratory, Teddington, Middlesex TW11 0LW U.K. (phone 01-943-6568; Telex 262344 NPLG; Fax 01-943-2155).

Workshop on Radiation Damage Correlation for Fusion Conditions, Sept. 28–Oct. 3, 1989, Silkeborg, Denmark, sponsored by the Risoe National Laboratory. Contact: B. N. Singh, Risoe National Laboratory, Metallurgy Dept., DK-4000 Roskilde, Denmark.

October 1989

International Conference on New Trends in Liquid Scintillation Counting and Organic Scintillators, Oct. 2–5, 1989, Gatlinburg, Tennessee, sponsored by Oak Ridge National Laboratory and the University of Georgia. Contact: University of Georgia, Center for Isotope Studies, 120 Riverbend Road, Athens, GA 30605.

13th International Symposium on Fusion Engineering, Oct. 2–6, 1989, Knoxville, Tennessee, sponsored by the American Nuclear Society. Contact: T. E. Shannon, ORNL, P.O. Box Y, FEDC Building, Oak Ridge, TN 37831 USA (phone 615-576-5500 or FTS 626-5500).

International Symposium on Safety Assessment of Radioactive Waste Repositories, Oct. 9–12, 1989, Paris, sponsored by the Commission of the European Communities, IAEA, and the OECD Nuclear Energy Agency. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

International Symposium on the Determination of Foodstuff Contamination After a Nuclear Accident, Oct. 9–13, 1989, Vienna, sponsored by the Food and Agriculture Organization of the United Nations, IAEA, and the World Health Organization. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

First International Conference on Radioactive Nuclear Beams, Oct. 16–18, 1989, Berkeley, California, sponsored by the U.S. Dept. of Energy. Contact: J. M. Nitschke, Nuclear Science Division, Lawrence Berkeley Laboratory, 1 Cyclotron Road, Berkeley, CA 94720 (phone 415-486-6471).

Supercomputing Conference, Oct. 16–20, 1989, Santa Clara, California. Contact: R. Bailey, National Aeronautics and Space Administration, Ames Research Center, Moffet Field, CA 94035.

17th Water Reactor Safety Information Meeting, Oct. 23–25, 1989, Rockville, Maryland, sponsored by the Office of Nuclear Regulatory Research, Nuclear Regulatory Commission. Contact: Allen J. Weiss, Meeting Coordinator, Brookhaven National Laboratory, Building 197-C, Upton, New York 11973.

Joint International Waste Management Conference, Oct. 23–28, 1989, Kyoto, Japan, sponsored by the American Society of Mechanical Engineers. Contact: Steve Slate, Pacific Northwest Laboratory, P.O. Box 999, Mailstop A4-90, Richland, WA 99352 (phone 509-376-8019 or FTS 444-8019) or the Japanese Organizing Committee, c/o JSME, 4-9 Yoyogi 2-chome, Shibuya-Ku, Tokyo, Japan.

International Conference on Decommissioning of Nuclear Installations, Oct. 24–27, 1989, Brussels, Belgium, sponsored by CEC. Contact: Mme. F. Rey, Conference Services, Avenue de l'Observatoire 3, Boite 17, B-1180 Brussels, Belgium (phone 32-2-235-8425).

November 1989

International Symposium on Recovery Operations in the Event of a Nuclear Accident or Radiological Emergency, Nov. 6–10, 1989, sponsored by IAEA. Contact: Barbara Thomas, IE-13, U. S. Department of Energy, Forrestal Building, Washington, DC 20585 USA (phone 202-586-6188 or FTS 896-6188).

Selected Topics of Monte Carlo Applications in Science and Technology, Nov. 6–10, 1989, a course sponsored by the Joint Research Centre, Ispra Establishment. Contact: Secretariat "ISPRA-Courses", Centro Comune di Ricerca, I-21020 ISPRA (Varese) Italy (phone 0332-789819/789839/781128).

9th International Conference on Solid State Dosimetry, Nov. 6–10, 1989, Vienna. Contact: Dr. A Hefner, Austrian Research Center at Seibersdorf, A-2444 Seibersdorf, Austria (02254-80, ext. 2500).

International Symposium on Radiological Protection (ISRP), Nov. 20–22, 1989, Beijing, sponsored by the Chinese Medical Association. Contact: Dr. Wei Kedao, Ministry of Public Health, Laboratory of Industrial Hygiene, 2 Xinkang Street,

Deshengmenwai, Beijing 100088, People's Republic of China.

Winter Meeting of the American Nuclear Society, Nov. 26–30, 1989, San Francisco. Contact: Mary J. Keenan, Meetings Manager, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

Scientific Basis for Nuclear Waste Management, Nov. 27–30, 1989, Boston Massachusetts, sponsored by the Materials Research Society. Contact: Conferences, MRS, 9800 McKnight Road, Suite 327, Pittsburgh, PA 15237 (phone 412-367-3003).

December 1989

4th International Conference on Fusion Reactor Materials, Dec. 4–8, 1989, Kyoto, Japan. Contact: Prof. S. Ishino, Dept. of Nuclear Engineering, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.

February 1990

HEART Conference, Feb. 12–16, 1990, Monterey, California. Contact: Thomas A. Tumolillo, Kaman Sciences Corp., P.O. Box 7463, Colorado Springs, CO 80933 (phone 719-599-1718).

Waste Management '90, Feb. 28–Mar. 1, 1990, Tucson, Arizona, sponsored by the University of Arizona and the American Nuclear Society. Contact: Dr. Morton E. Wacks, Dept. NEE, University of Arizona, Tucson, AZ 85721 (phone 602-621-6160).

March 1990

7th Pacific Basin Conference, Mar. 4–8, 1990, San Diego, California, sponsored by the ANS. Contact: ANS Meetings Department, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

International Conference on Supercomputing in Nuclear Applications, Mar. 12–16, 1990, Mito City, Japan, sponsored by JAERI. Contact: Kiyoshi Asai, Computing Center, JAERI, Tokai-mura, Naka-gun, Ibaraki 319-11, Japan (phone 0292(82)5611; Fax 0292(82)6070).

April 1990

International Conference for High-Level Radioactive Waste Management, April 8–12, 1990, Las Vegas, Nevada. Contact: Dean William Wells, Howard Hughes College of Engineering, UNLV, Las Vegas, NV 89154 (phone 702-739-3699).

Physor '90, Apr. 23–26, 1990, Marseille, France. Contact: Yuri Orechwa, Engineering Physics Division, Bldg.

208, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439 USA.

June 1990

American Nuclear Society Annual Meeting, June 10–15, 1990, Nashville, Tennessee. Contact: Mary Keenan, Meetings Manager, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 312-352-6611).

17th European Conference on Controlled Fusion and Plasma Heating, June 25–29, 1990, Amsterdam, The Netherlands. Contact: F. C. Schuller, FOM-Institut voor Plasmafysica "Rujihuizen," Postbus 1207, NL-3430 BE Nieuwegein.

August 1990

International Topical Meeting on Fast Reactor Safety, Aug. 12–16, 1990, Snowbird, Utah, sponsored by the ANS. Contact: Wayne K. Letho, Argonne National Laboratory, P.O. Box 2528, Idaho Falls, ID 83403-2528 (phone 208-526-7369).

Operational Radiation Protection, Aug. 20–22, 1990, Idaho Falls, Idaho, sponsored by the ANS. Contact: Jack Liebenthal, EG&G Idaho, Inc., P.O. Box 1625, Idaho Falls, ID 83415-3515 (phone 208-526-1253).

September 1990

16th Symposium on Fusion Technology, Sept. 3–7, 1990, London. Contact: JET Joint Undertaking, Conference Office, Abingdon, Oxon, OX14 3EA, United Kingdom.

October 1990

Spectrum '90: Radioactive Waste Technologies, Decontamination, Decommissioning and Hazardous Wastes, Oct. 3–5, 1990, Knoxville, Tennessee, sponsored by ANS. Contact: Thomas H. Row, ORNL, P.O. Box 2008, 4500N MS6198, Oak Ridge, TN 37831-6198 (phone 615-574-5974 or FTS 624-5974).

9th Topical Meeting on Technology of Fusion Energy, Oct. 8–12, 1990, Chicago, sponsored by the American Nuclear Society. Contact: Dr. Charles Baker, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439 (phone 312-972-4836, FTS 972-4836).

November 1990

American Nuclear Society Winter Meeting, Nov. 11–16, 1990, Washington, D.C. Contact: Mary Keenan, Meetings Manager, ANS, 555 N. Kensington Ave., La Grange Park, IL 60525.

JUNE 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

ANL/FPP/TM-239, . . *A Continuous Mode Data Acquisition Technique for Proton Recoil Proportional Counter Neutron Spectrometers.,* . . Bennett, E.F., . . March 1989, . . NTIS, PC A07/MF A01

BNL-52125, . . *An Experimental Survey of the Factors that Affect Leaching from Low-Level Radioactive Waste Forms.,* . . Dougherty, D.R., . . September 1988, . . NTIS

CEA-TR-2198 (In French), . . *Kerma Factors in Interaction of Neutrons with Boron Carbide.,* . . Bondarenko, I.M., . . Translated from the Russian Report INIS-mf-5637., . . March 1986, . . MF available from INIS.

CONF-850927, Volumes 1 and 2, . . *Controlled Fusion and Plasma Physics.,* . . Pocs, L.(Ed.), . . In: 12th European Conference on Controlled Fusion and Plasma Physics, Budapest, 2-6 September 1985., . . 1985, . . European Physical Society

CONF-8501123, pp.171-177, . . *SINQ—A Project for a Continuous Spallation Neutron Scope.,* . . Atchinson, F.; Fischer, W.E.; Pepin, M.; Takeda, Y.; Tschalaer, Ch., . . 1985, . . International Atomic Energy Agency, Vienna

DP-1606, Rev.2, . . *Defense Waste Processing Facility Wasteform and Canister Description.,* . . Baxter, R.G., . . December 1988, . . NTIS

DOE/ET-53088-369, . . *Influence of Attractive Interaction Between Deuterons in Pd on Nuclear Fusion.,* . . Tajima, T.; Iyetomi, H.; Ichimaru, S., . . April 1989, . . NTIS

EUR-FU-12-80/89-92, . . *Fusion Waste Management—Safety and Environment Studies 1986-86-.,* . . Gulden, W., . . January 1989, . . Commission of the European Communities, Brussels, Belgium. Directorate General, Fusion Programme

GTFR-86, . . *Reactor Prospects of Muon-Catalyzed Fusion of Deuterium and Tritium Concentrated in Transition Metals.,* . . Stacey, W.M.,Jr., . . April 1989, . . Georgia Inst. of Tech., Atlanta, GA

IJS-DP-4583, . . *Burnup Calculations of TRIGA Fuel Elements.,* . . Mele, I.; Ravnik, M.; Slavič, S.; Zefran, B., . . 1987, . . Univerza E. Kardelja, Institut –Jozef Stefan– Ljubljana, Jugoslavija

IJS-DP-5130, . . *Neutron Embrittlement of PWR Pressure Vessel.,* . . Najzer, M.; Glumac, B.; Kodeli, I.; Remec, I.; Steele, L.E., . . August 1988, . . Univerza E. Kardelja, Institut –Jozef Stefan– Ljubljana, Jugoslavija

IJS-DP-5321, . . *Burnup Calculations of TRIGA Fuel Elements. Calculation of TRIGA Isotopic Inventory with ORIGEN2.,* . . Mele, I.; Slavic, S.; Ravnik, M., . . December 1988, . . Univerza E. Kardelja, Institut –Jozef Stefan– Ljubljana, Jugoslavija

INDC(BZL)-030/LJ, . . *A Multi-Step Direct Multi-Step Compound Description of Fast Particle Induced Reactions.,* . . Carlson, B.V., . . February 1989, . . International Atomic Energy Agency, Vienna, Austria. Nuclear Data Section

INDC(CCP)-290/LJ, . . *Spectra of Inelastically Scattered Neutrons with an Initial Energy of 14.1 MeV and Nuclear Level Density.,* . . Sal'nikov, O.A., . . February 1989, . . International Atomic Energy Agency, Vienna, Austria. Nuclear Data Section

INDC(CCP)-297/GE, . . *The International Evaluated Nuclear Structure Data File (ENSDF) in Fundamental and Applied Photonuclear Research.,* . . Boboshin, I.N.; Varlamov, V.V., . . April 1989, . . International Atomic Energy Agency, Vienna, Austria. Nuclear Data Section

INDC(CSR)-015/LJ, . . *Methods for the Calculation of Neutron Induced Reactions.,* . . Gmuca, S.; Betak, E.; Antalik, R., . . February 1989, . . International Atomic Energy Agency, Vienna, Austria. Nuclear Data Section

INFN-LNF-88-15(P), . . *Calculation of Dose Equivalent Index, Effective Dose Equivalent and Ambient Dose Equivalent for the Giant Resonance Neutron Spectra Produced at an Electron Accelerator.,* . . Pelliccioni, M., . . 1988, . . MF available from INIS.

JAERI-M-88-114 (In Japanese), . . *Vectorization Techniques for Neutron Transport Monte Carlo Codes.,* . . Suganuma, M.; Higuchi, K.; Asai, K., . . June 1988, . . MF available from INIS.

JAERI-M-89-037, . . *Calculation of the Delayed Fission Gamma-Ray Spectra from U-235, -238, Pu-239,*

-240 and Pu-241; Tabular Data., . . Yoshida, T.; Katakura, J.; Ihara, H., . . March 1989, . . Japan Atomic Energy Research Inst., Tokyo

JINR-E-13-89-61, . . *Application of the Monte Carlo Method to Determine the Thickness of a Delta E-Detector.,* . . Kozma, P., . . 1989, . . Joint Inst. for Nuclear Research, Dubna, USSR

KAPL-4708, . . *NODEX: A High Order NEM-Based Nodal Code.,* . . Sutton, T.M., . . February 1989, . . General Electric Company, Knolls Atomic Power Laboratory, Schenectady, New York

LA-11491-T, . . *Measurement of np Elastic Scattering Spin-Spin Correlation Parameters at 484, 634, and 788 MeV.,* . . Garnett, R.W., . . March 1989, . . NTIS, PC A12/MF A01

LA-11534-T; Thesis, . . *Evaluation and Application of Delayed Neutron Precursor Data.,* . . Brady, M.C., . . Department of Nuclear Engineering, the Graduated College of Texas A&M University, College Station, TX, . . April 1989, . . NTIS

LBL-25715, . . *Aperture of Two-Counter Telescopes.,* . . Swanson, W.P., . . April 1988, . . NTIS, PC A02

LBL-26259, . . *A Preliminary Report on X-Ray Photoabsorption Coefficients and Atomic Scattering Factors for 92 Elements in the 10-10,000 eV Region.,* . . Henke, B.L.; Davis, J.C.; Gullikson, E.M.; Perera, C. C.C., . . November 1988, . . NTIS

MIT-PFC/JA-89-24, . . *Gamma-Ray Spectra in the Fleischmann Pons, Hawkins Experiment.,* . . Petrasso, R.D., . . April 1989, . . Massachusetts Inst. of Tech., Cambridge, Plasma Fusion Center

NASA-CR-4228, . . *Probabilities and Statistics for Backscatter Estimates Obtained by a Scatterometer with Applications to New Scatterometer Design Data.,* . . Pierson, W.J.,Jr., . . April 1989, . . CUNY Inst. of Marine and Atomspheric Sciences, New York, New York

NRPB-R218, . . *Assessment of Subseabed Disposal of Vitrified High Level Waste for the PAGIS Project.,* . . Mobbs, S.F.; Charles, D.; Delow, C.E.; McColl, N.P., . . March 1989, . . HMSO

NUREG/CR-4879, Vol.2, . . *Demonstration of Performance Modeling of a Low-Level Waste Shallow-Land Burial Site. A Comparison of Predictive Radionuclide Transport Modeling Versus Field Observations at the -A- Disposal Area, Chalk River Laboratories.,* . . Robertson, D.E., . . March 1989, . . NRC; GPO; NTIS

NUREG/CR-5230, . . *Shutdown Decay Heat Removal Analysis: Plant Case Studies and Special Issues, Summary Report.,* . . Ericson, D.M., . . April 1989, . . NRC, GPO, NTIS

NUREG/CR-5319, . . *Risk Sensitivity to Human Error.,* . . Samanta, P., . . April 1989, . . NRC; GPO; NTIS

NUREG/CR-5357, . . *An Exploratory Study of Element Interactions and Composition Dependencies in Radiation Sensitivity Development, Final Report.,* . . Hawthorne, J.R., . . April 1989, . . NRC; GPO; NTIS

OKTAVIAN Report D-89-02, . . *Investigation of Cold Nuclear Fusion—A Comment on Theoretical Possibility.,* . . Takahashi, A., . . April 15, 1989, . . Department of Nuclear Engineering, Osaka University, Yamadaoka 2-1, Suita, Osaka 565, Japan

ORNL-6544, . . *1987 Neutron and Gamma Personnel Dosimeter Intercomparison Study Using a D_2O Moderated ^{252}Cf Sources.,* . . Swaja, R.E.; West, L.E.; Sims, C.S.; Welty, T.J., . . May 1989, . . NTIS

ORNL/CSD/TM-251, . . *Multicode Comparison of Selected Source-Term Computer Codes.,* . . Hermann, O.W.; Parks, C.V.; Renier, J.P.; Roddy, J.W.; Ashline, R.C.; Wilson, W.B.; LaBauve, R.J., . . April 1989, . . NTIS, PC A09/MF A01

ORNL/TM-10919, . . *Compendium of Technical Computer Codes Used in Support of the DOE Office of Civilian Radioactive Waste Management.,* . . McBride, A.F.; Ward, W.M.; Roddy, J.W.; Reich, W.J.; Austin, P.N.; McCarn, L.B.; Ludwig, S.B.; Roussin, R.W., . . April 1989, . . NTIS, PC A15/MF A01

ORNL/TM-11037, . . *ADGEN—ADjoint GENerator for Computer Models.,* . . Worley, B.A.; Pin, F.G.; Horwedel, J.E.; Oblow, E.M., . . May 1989, . . NTIS, PC A05/MF A01

ORNL/TM-11143, . . *Shield Optimization Program, Part I: Executive Summary.,* . . Santoro, R.T.; Gabriel, T.A., . . June 1989, . . NTIS, PC A04/MF A01

ORNL/TM-11160, . . *Shield Optimization Program, Part V: A Hydrodynamic Comparison Using HULL and PUFF-TFT for a One-Dimensional Aluminum Slab.,* . . Smith, M.S.; Burns, T.J.; Johnson, J.O., . . June 1989, . . NTIS, PC A03/MF A01

ORNL/TM-11199, . . *Detectors for the Superconducting Collider, Design Concepts, and Simulation.,* . . Gabriel, T.A., . . June 1989, . . NTIS, PC A04/MF A01

PB-88-211818/XAB, . . *NBS (National Bureau of Standards) Measurement Services: Neutron-Source-Strength Calibrations. Final Report.,* . . McGarry, E.D.; Boswell, E.W., . . March 1988, . . NTIS, PC A04/MF A01

PNL-3594, Rev.9, . . *International Nuclear Fuel Cycle Fact Book.,* . . Leigh, I.W., . . January 1989, . . Pacific Northwest Lab., Richland, WA

PTB-ND-15, . . *The Significance of Scattering Cross-Sections of Fast Neutron for Neutron Dosimetry in Soft Tissues.,* . . Jahr R.; Brede, H.J., . . May 1979, . . Institut Berlin der Physikalisch-Technischen Bundesanstalt, Abbestrasse 2-12, 1000 Berlin 10 (Charlottenburg).

SAND-88-7095, . . *Cost Savings from Extended Life Nuclear Plants.,* . . Forest, L.R.,Jr.; Deutsch, T.R.; Schenler, W.W., . . September 1988, . . NTIS

UCID-21488, . . *Extension of the Integrated Tiger Series (ITS) of Electron-Photon Monte Carlo Codes to 100 GeV.,* . . Miller, S.G., . . August 1988, . . NTIS, PC A02/MF A01

UCRL-53840, . . *Radiological Conditions at Bikini Atoll: Radionuclide Concentrations in Vegetation, Soil, Animals, Cistern Water, and Ground Water.*, . . Robinson, W.L.; Conrado, C.L.; Stuart, M.L., . . May 1988, . . NTIS

WINCO-1065, . . *Development of On-Site Accident Criteria for Waste Transfer Casks.*, . . Uldrich, E.D., . . March 1989, . . Idaho National Engineering Lab., Idaho Falls, Idaho

Ann. Phys., 45(2), 117-123, . . *Angular Gamma Dose Rate Distribution at the Surface of Injected Ducted Concrete Shield.*, . . Sayed Ahmed, F.M.; Abboud, A., . . March 1988

Appl. Radiat. Isot., 39(9), 957-967, . . *Comparisons Between Calculated and Measured Gamma-Ray Energy-Deposition Rates in a One-Dimensional Mixed Fast-Neutron/Gamma-Ray Field.*, . . Wang, T.; Peir, J.; Hsu, P., . . 1989

J. Nucl. Sci. Technol., 26(5), 558-560, . . *Opening Possibility of Deuteron-Catalyzed Cascade Fusion Channel in PdD Under D_2O Electrolysis.*, . . Takahashi, A., . . May 1989

Kernenergie, 31(10), 422-426, . . *Measurement and Comparsion with Calculations of Neutron Leakage Spectra from U, Pb, Be Spheres with Central 14-MeV Neutron Source.*, . . Androsenko, A.A.; Androsenko, P.A.; Derkin, B.B.; Zhuravlev, B.V.; Kobazev, M.G.; Sal'nikov, O.A.; Simakov, S.P., . . October 1988

Nucl. Instrum. Methods, B36, 96-97, . . *Synopsis of the Extension of the Integrated Tiger Series (ITS) of Electron/Photon Monte Carlo Codes to 100 GeV. (Letter to the Editor)*, . . Miller, S.G., . . 1989

Nuclear Physics and Spectroscopy of Atoms and Molecules, No.4, 3-7, . . *Fast Neutron Spectra Unfolding with SAND-II and MMP.*, . . Bondars, H.; Kamnev, V.; Lapenas, A.; Troshin, V., . . 1980

Nucl. Instum. Methods, A275(1), 172-174, . . *An Air Attenuation Correction Factor for Use with Long Counters.*, . . Croft, S.; Weaver, D.R., . . February 1, 1989

Nucl. Sci. Eng., 102(2), 140-152, . . *Interface Angular Coupling Reductions in Variational Nodal Methods for Neutron Transport.*, . . Lewis, E.E., . . June 1989

Nucl. Sci. Eng., 102(2), 172-182, . . *Time-Dependent Single-Collision Kernels for Integral Transport Theory.*, . . Henderson, D.L.; Maynard, C.W., . . June 1989

Nucl. Sci. Eng., 102(2), 191-209, . . *Empirical Formulas of Neutron Flux Distributions in Cylindrical Ducts in Water or Concrete Shields.*, . . Miura, T., . . June 1989

Nucl. Technology, 85(3), 300-313, . . *A Model for the Transient Release of Fission Products for UO_2 Fuel: Gasout Code Description.*, . . Tayal, M.; Macdonal, L.D.; Kohn, E.; Dovigo, W.P., . . June 1989

Phys. Med. Biol., 33(9), 1037-1053, . . *Monte Carlo Calculation of Energy Build-Up Factors in the Range from 15 keV to 100 keV with Special Reference to the Dosimetry of 125-I Seeds.*, . . Herbold, G.; Hartmann, G.; Treuer, H.; Lorenz, W.J., . . September 1988

Phys. Med. Biol., 33(9), 1055-1064, . . *Application of Normal and High-Pressure Ionisation Chambers for the Determination of A150 Kerma Components in a 19 MeV Neutron Field.*, . . Schlegel-Bickmann, D.; Brede, H.J.; Dietze, G.; Guldbakke, S., . . September 1988

Thesis, . . *Improved Models and Results for Evaluating Neutron Kerma Factors.*, . . Farawila, Y.M., . . Wisconsin Univ., Madison, WI, . . 1987, . . University Microfilms Order No.87-23,328

Thesis, . . *Formulation of the Streaming-Ray Method for Electron-Transport Calculations in Two Dimensions.*, . . Smith, M.S., . . Arizona University, Tucson, AZ, . . 1987, . . University Microfilms Order No.87-27,937

BOOK, . . *A Compendium of Major U.S. Radiation Protection Standards and Guides: Legal and Technical Facts.*, . . ORAU (Mills, W.A.; Flack, D.S.; Arsenault, F.J.; Conti, E.F.), . . 1989, . . Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 $55.00

COMPUTER CODES LITERATURE

CONF-871007, 1271-78 . . . . ITER
Nuclear Modules of ITER Tokamak Systems Code., . . Gohar, Y.; Baker, C.; Brooks, J., . . Argonne National Laboratory, IL, . . October 1987

IFVE-ORI-87-59 (In Russian) . . . . CASCADE
Simulation of Nuclear Interactions in High Energy Hadronic Cascade Calculations., . . Mokhov, N.V.; Striganov, S.I.; Uzunyan, A.V., . . Gosudarstvennyj Komitet Ispol'zovaniyu Atomnoj Ehnergii SSSR,, . . 1987, . . AVAIL: INIS (microfiche only)

IJS-DP-4583 . . . . TRIGA CODES
Burnup Calculations of TRIGA Fuel Elements., . . Mele, I.; Ravnik, M.; Slavic, S.; Zefran, B., . . Institut –Jozef Stefan–, Ljubljana, Yugoslavia, . . 1987

IJS-DP-5321 . . . . ORIGEN2
Burnup Calculations of TRIGA Fuel Elements: Calculation of TRIGA Isotopic Inventory with ORIGEN2., . . Mele, I.; Slavic, S.; Ravnik, M., . . Institut –Jozef Stefan–, Ljubljana, Yugoslavia, . . December 1988

IJS-DP-5337 . . . . ORIGEN 2
Code ORIGEN 2—Implementation Report., . . Slavic, S., . . Institut –Jozef Stefan–, Ljubljana, Yugoslavia

KAPL-4708 . . . . NODEX
NODEX: A High Order Nem-Based Multigroup Nodal Code., . . Sutton, T.M., . . Knolls Atomic Power Laboratory, Schenectady, NY, . . February 1989

LA-11249-PR .... RADIATION TRANSPORT
Radiation Transport: Progress Report, July 1, 1987-
September 30, 1987., . . O'Dell, R.D.; Nagy, A., . .
Los Alamos National Laboratory, NM, .. May 1988,
. . AVAIL: NTIS; INIS (microfiche only)

LA-11534-T .... BETA
Evaluation and Application of Delayed Neutron
Precursor Data., . . Brady, M.C., . . Texas A&M
University, Austin, TX, . . April 1989

Med. Phys., 13(5), 687-94 .... EGS; ETRAN
Differences in Electron Depth-Dose Curves
Calculated with EGS and ETRAN and Improved
Energy-Range Relationships., . . Rogers, D.W.O.;
Bielajew, A.F., . . National Research Council of
Canada, Ottawa, . . September-October 1986

Nucl. Geophys, 2(4), 215-230 .... SNUPAR
SNUPAR—A Nuclear Parameter Code for Nuclear
Geophysics Applications., . . McKeon, D.C.; Scott,
H.D., . . Schlumberger Well Services, Houston, TX,
. . 1988

Nucl. Instr. Meth., B36, 96-97 ....ITS
Synopsis of the Extension of the Integrated TIGER
Series (ITS) of Electron/Photon Monte Carlo
Codes to 100 GeV., . . Miller, S.G., . . Lawrence
Livermore National Laboratory, CA, . . 1989

ORNL/CSD/TM-251 .... SOURCE-TERM CODES
Multicode Comparison of Selected Source-Term
Codes., . . Hermann, O.W.; Parks, C.V.; Renier, J.P.;
Roddy, J.W.; Ashline, R.C.; Wilson, W.B.; LaBauve,
R.L., . . Oak Ridge National Laboratory, TN; Los
Alamos National Laboratory, NM, . . April 1989

ORNL/TM-10672 .... SESOIL
Qualitative Validation of Pollutant Transport
Components of an Unsaturated Soil Zone Model
(SESOIL)., . . Travis, C.C.; Hetrick, D.M.; Leonard,
S.K.; Kinerson, R.S., . . Oak Ridge National
Laboratory, TN, . . March 1989

ORNL/TM-10919 .... OCRWM Codes
Compendium of Technical Computer Codes Used
in Support of the DOE Office of Civilian
Radioactive Waste Management., . . McBride, A.F.;
Austin, P.N.; Ward, W.M.; McCarn, L.B.; Roddy,
J.W.; Ludwig, S.B.; Reich, W.J.; Roussin, R.W., . .
Science Applications International Corp., Oak
Ridge, TN; Oak Ridge National Laboratory, TN, .
. April 1989

ORNL/TM-10995 .... HULL
Recent ORNL Improvements to the HULL
Hydrocode System., . . Burns, T.J., . . Oak Ridge
National Laboratory, TN, . . May 1989

ORNL/TM-11082̸3̸ .... FERD-PC
User's Manual for FERD-PC., . . Rooney, B.D., . .
Oak Ridge National Laboratory, TN, . . April 1989

UCID-21488 ....ITS
Extension of the Integrated TIGER Series (ITS) of
Electron- Photon Monte Carlo Codes to 100 GeV.,
. . Miller, S.G., . . Lawrence Livermore National
Laboratory, CA, . . August 1988