RSIC Newsletter

Oak Ridge National Laboratory
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There is tendency in the 20th century to forget that there will be a 21st century science, and indeed a 30th century science, from which vantage points our knowledge of the universe may appear quite different. We suffer, perhaps, from temporal provincialism, a form of arrogance that has always irritated posterity.–J. Allen Hynek

RP&S Program for ANS Winter Meeting

The technical program for the Radiation Protection and Shielding (RP&S) Division at the 1990 Winter Meeting of the ANS is well developed. In addition to the normal range of general topics several special sessions are planned. The sessions include:

- "LMR Shielding–Past, Present, and Future," organized by L. L. Carter, will focus on shielding issues for liquid-metal cooled reactors. Invited and contributed papers will cover foreign and domestic LMR reactors which are operating or under design, current analyses and experiments being used to improve shield designs, and future directions. Special emphasis will be given to experience with FFTF. [Note: This is one of approximately eight technical sessions spanning several divisions to commemorate the 10th anniversary of the initial criticality of the FFTF reactor.]
- "Radiological Assessments for Decontamination, Decommissioning, and Disposal," organizers, L. West, Jr., and J. M. Cardito. Decontamination and decommissioning of sites which now contain or have contained radioactive material inevitably lead to a radiological assessment of the site. For several years the U.S. DOE has been reviewing all formerly utilized sites to implement remedial action programs to assure the sites meet qualifications for planned dispositions. Release of some of these facilities for unrestricted use has imposed rigorous examination of both the radiological assessment models and the assumptions made in the application of these models. New computer codes have been developed with increasingly more sophisticated models for radiological assessment. This session reviews the code developments and application of the models to specific sites.
- "Radiation Shielding Calculations on Personal Computers," organizer, B. L. Kirk. Shielding calculations are being performed increasingly on personal computers (PC) as these computers permeate the engineering work place. There has been an emergence of shielding codes for PCs based on all types of shielding models: analytical approximation models, discrete ordinates models, and even Monte Carlo models. Some codes are developed specifically for the PC environment to provide easy and convenient analysis of specialized problems, while other codes

are PC implementations of traditional mainframe transport codes. Although this topic has been included in past meetings, the rapid evolution of computer hardware and operating system software has bolstered an even more rapid utilization of PC-based shielding codes. This session reviews the recent development of PC shielding codes and nuclear data files and reviews the experience acquired in the application of these codes.

- "Doses From Spent Fuel Handling, Storage, and Transportation," organizers, R. M. Westfall and D. A. McClure. Photon and neutron radiation sources arise from the radioactive decay of fission products, actinides, and activation products within fuel structural components. The scope of this session includes the characterization of these sources as a function of fuel irradiation and decay time, strategies for shielding these sources for various applications, and the determination of dose levels. Application areas include: spent fuel handling activities, temporary reactor-site storage facilities, spent fuel transportation, and permanent storage facilities.

CHANGES TO THE COMPUTER CODE COLLECTION

Four changes and additions were made to the computer code collection during the month. Three new code systems were packaged and added to the collection, and an existing code package was extended with an additional PC version.

CCC-200C/MCNP 3

A new personal computer hardware version of this general purpose Monte Carlo neutron and gamma-ray transport code system was provided by Experimental and Mathematical Physics Consultants, Gaithersburg, Maryland. This version, designated CCC-200C/MCNP 3, is based on the CCC-200B package contributed by Pro-Com GmbH, Aachen, Germany. CCC-200B runs on the IBM PC/AT equipped with a 32-bit co-processor board, DSI-32/4, available from DEFINICON Systems, Inc., and requires the Green Hills FORTRAN software and runtime library provided by DEFINICON. The new release was implemented on a DTK 30386 PC with an 80387 coprocessor, both 20 MHz, an 8-Mbyte memory (4 Mbyte used as virtual disk), and a 128-Mbyte hard disk. It runs under IBM Operating System/2, Standard Edition, Version 1.2 or MS DOS, Version 3.3., using the Microsoft FORTRAN Compiler Version 5.0 and Microsoft Linker, Version 5.03 on IBM PC/AT 30386 compatibles. Note that MCNP 3B, released by the Los Alamos developers, has been distributed by RSIC for mainframe users since February 1989. The PC version is distributed on 10 DS/HD (1.2 MB) 5.25-in. diskettes. References: LA-7396-M, Rev. (April 1981) and informal documentation. FORTRAN 77; CDC 7600, CRAY 1, IBM 3033, VAX 11 (A) and IBM PC/AT (B and C).

CCC-551/AIRDOS-PC

The EPA Office of Radiation Programs, Las Vegas, Nevada, contributed this code system to calculate the effective dose equivalent to maximally exposed individuals as required under 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAPs). AIRDOS-PC also prepares a two-page compliance report suitable for submission to EPA and calculates organ dose equivalents. AIRDOS-PC estimates dose using the same methodology as The Clean Air Act Assessment Package-1988 (CCC-542/CAP-88), which is used by EPA for assessment of dose and risk from radionuclide emissions to air. AIRDOS-PC implements a long-term average Gaussian plume model. The associated terrestrial model for deposition is based on NRC Regulatory Guide 1.109. The 50-year effective dose equivalent factors are calculated using weighting factors from ICRP-26. AIRDOS-PC runs on IBM PC or compatible personal computers with 640 Kb RAM and math coprocessor chip. The Microsoft C Version 4.0 and IBM Professional FORTRAN (PROFORT)

Version 1.0 compilers, Microsoft Overlay Linker Version 3.51, and C Utility Library Version 3.0 are required to create the executable files. AIRDOS-PC runs under DOS version 2.0 or higher. The package, including source and executable files, can be transmitted on one DS/HD (1.2 MB) 5.25-in. diskette. Alternately, four DS/DD (360 KB) diskettes can be used. Reference: EPA 520/6-89-035 (Dec. 1989). FORTRAN 77 and C; IBM PC.

CCC-553/RASCAL-MICRO

This radiological assessment system for consequence analysis was contributed by Oak Ridge National Laboratory. RASCAL, Version 1.3, estimates reactor source term, atmospheric transport and doses resulting from radiological emergencies and can be used to assist in making protective action decisions. RASCAL computes power reactor source terms, airborne transport of activity (through both Gaussian plume and puff models), and the resulting doses. The results allow easy comparison to EPA protective action guidelines. RASCAL has run on IBM-AT and COMPAC 286/386 portables. It should run on any MS-DOS personal computer that has 640 K of memory and a hard disk with 1.6 Megabytes free. A math coprocessor will make the system run faster but is not required. The source code was compiled using Microsoft C and FORTRAN compilers. The C source requires the Vermont Creative Software's libraries "Windows for C" and "Windows for Data." These are libraries used to write the input screens. The GSS*CGI device drivers from Graphics Software Systems are required to link the FORTRAN source for the high resolution graphics programs. The executable files and source files are included in this package. Two DS/HD (1.2Mb) 5.25-in. diskettes are required for transmittal. Reference: NUREG/CR-5247, ORNL/TM-10955 (September 1989). FORTRAN 77; IBM PC.

PSR-282/SUPERDAN-PC

Science Applications International, Inc., Oak Ridge, Tennessee, contributed this code system to calculate the Dancoff factor of spheres, cylinders and slabs. The Dancoff factor is calculated using three types of geometry: infinitely long cylinders, spheres and infinite slabs. The program for cylinders includes corrections for the effect of partial shadowing of a rod by adjacent rods and for the effect of clad surrounding rods. Slab geometry also considers the effect of clad. The program executes on IBM PC and compatible computers with or without a math co-processor. The code is written in FORTRAN 77 and was tested under PC-DOS using the Microsoft Version 4.01 compiler and linker. The package is distributed on one DS/DD (360 KB) 5.25-in. diskette. References: ORNL/NUREG/CSD/TM-2 (1978). FORTRAN 77; IBM PC.

CHANGE TO THE DATA LIBRARY COLLECTION

One existing data library was updated to simplify the conversion program.

DLC-86/FLUNG

Oak Ridge National Laboratory recently updated these coupled 35-group neutron and 21-group gamma-ray, P3 cross sections for fusion applications contributed in 1981. The original conversion program to read ANISN card images and write a binary library was replaced with a simplified version called BCBN and the data file was updated to change the BCD (026) punch characters to EBCDIC (029) punch. Reference: ORNL/TM-7828 (June 1981).

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. Homonori Hyoda has informed RSIC of his retirement from Okayama Vocational Training College. He is currently residing in Kyoto.

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *Prof. D. Emendoerfer*, University of Stuttgart, Fed. Rep. of Germany; *Dr. Mahmoud Z. Youssef*, UCLA, Los Angeles, California; and *Dennis Mennerdahl*, E. Mennerdahl Systems, Sweden.

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.

SPECTRUM '90 Program Set

The technical program for the *International Topical Meeting on Nuclear and Hazardous Waste Management (SPECTRUM '90)* is now in place. The meeting will be held September 30–October 4, 1990, at the Hyatt Regency Hotel in Knoxville, Tennessee. A list of the sessions as planned and the session chairs follows.

- Session J-1: Waste Management Policy; Session Chair, Mary English (University of Tennessee)
- Session J-2: Radioactive Waste Processing and Storage; Session Chair, Lance Mezga (Martin Marietta Energy Systems, Inc.)
- Session J-3: Mixed and Hazardous Wastes; Session Chair, Bill Colglazier (University of Tennessee)
- Session J-4: Geologic Disposal; Session Chair, Ruth Weiner (CNWRA)
- Session L-1: Greater-Than-Class-C Waste, Session Chair, Glenn Pierce (Stoller Corp.)
- Session L-2: TRU Waste, Session Chair, Bill Chiquelin (WIPP Project)
- Session L-3: Testing and Site Remediation; Session Chair, Eugene E. Smeltzer (Westinghouse)
- Session L-4: On-Site Monitoring; Session Chair, Robert H. Neil (Environmental Eval. Group)
- Session L-5: Waste Minimization; Session Chair, Nancy Rothermich (HAZWRAP)
- Session R-1: Achieving a Quality Product Through Licensing and Training; Session Chair, Rhinehardt Odoj (Germany)
- Session R-2: Decontamination & Decommissioning; Session Chair, Elizabeth M. Bowers (U.S. DOE)
- Session R-3: Decontamination & Decommissioning; Session Chair, J. J. Zimmer (Westinghouse)
- Session R-4: Technologies to Demonstrate Environmental Compliance; Session Chair, Thomas Brouns (Battelle PNL)
- Session S-1: Spent Fuel; Session Chair, Ray Lambert (EPRI)
- Session S-2: Reprocessing; Session Chair, Richard L. Philippone (Bechtel)
- Session S-3: High-Level Waste; Session Chair, C. R. Allen (Battelle PNL)
- Session T-1: Spent Fuel Transport Experience and Planning; Session Chair, G. Dicke (Ontario Hydro, Canada)
- Session T-2: Spent Fuel Transport Systems and Equipment Development; Session Chair, W. Lake (U.S. DOE)
- Session W-1: Waste Operations; Session Chair, Kirk McKinley (EG&G)

Two concurrent technical tours, focusing on Low-Level Radioactive Waste Disposal and applications of robotics in waste management are planned for Thursday afternoon, Oct. 4. As well as the technical tours, the guest/spouse program includes a tour of Biltmore House and Gardens in Asheville, North Carolina, and a tour of Pigeon Forge, Tennessee.

For further information on the meeting, contact SPECTRUM '90, P.O. Box 1342, Oak Ridge, TN 37831-1342.

Calls for Papers

In the interest of promoting participation in both domestic and international meetings in the areas of radiation protection, shielding, and transport, RSIC publishes calls for papers as soon as they are made available to us.

Advances in Mathematics, Computations, and Reactor Physics

The International Topical Meeting of the Mathematics and Computation Division and Reactor Physics Division of the ANS, *Advances in Mathematics, Computations, and Reactor Physics*, will be held April 28–May 1, 1991, in Pittsburgh, Pennsylvania, USA. Papers of interest to these divisions of the ANS will be considered for inclusion in the program. Topics suggested are:

Computers and Computing: Advances in Supercomputers; Networks and Communications; Distributed Computing; Parallel Processing and Vectorization; Computing Practices/Software Engineering; Graphics and Animation; High Speed Computing Applied to Reactor Operation; Real-Time Computation/Simulation Models; Artificial Intelligence and Expert Systems (Optimization of Nuclear Systems, Robotics and Manufacturing Applications, and Reactor Design and Operation); and Neural Networks.

Mathematics and Computations: Advances in Computational Methods; Numerical Optimization; Acceleration Techniques for Iterative Methods (Solution of Linear and Nonlinear Systems); Methods for Radiative, Neutral, and Charged Particle Transport; Diffusion Theory and Kinetics; Numerical Methods in Thermal & Hydraulics, Fluid Dynamics, and Structural Mechanics; Computational and Mathematical Problems of Reactor Dynamics and Safety Analysis; Computational Aspects of Power Distribution, Control, and Optimization; Nuclear Systems Safety Methods; and Methods for Probabilistic Risk Assessment.

Reactor Physics: Reactor Physics, Theory, and Analysis Methods; Advanced Reactor Concepts/Designs; Space Reactor and Research Reactor Physics; Advanced Assembly Lattice Methods; Physics and Safety Aspects of Core Design; Reactor Design Validation and Operating Experience; Physics of Reactor Operation; Criticality Safety and Applications; Point and Space-Time Core Models for Transient Analysis; Nuclear Plant Analyzers, Data Bases & Code Systems; Improvement and Validation of Plant Simulation Codes; Reactor Control and Monitoring; Fuel Cycle and Fuel Management; Shielding and Core Management; Nuclear Data; Integral Experiments—Measurements and Analysis; Reactor Physics Calculations Versus Measurements; and Sensitivity Theory and Data Adjustment Techniques for Reactor Analysis.

Parlor/Poster Sessions: Paper and Poster Sessions on Methods, Algorithms, and Computer Performance Benchmarks; Paper and Poster Sessions on Standards; and a Poster Session on Computer Programs which offer new or improved methods or options (only code abstracts such as that published in *Nuclear Science and Engineering*)

Contributions submitted for the poster session should be so designated and in the form of 1000-word summaries for Benchmark and Standards papers. Computer code abstracts must be in the form used by the NESC, RSIC, and NEA Code Centers. All contributions are due **August 20, 1990**, and should be submitted to I. K. Abu-Shumays, RT-Mathematics, 34F, Bettis Atomic Power Laboratory, P.O. Box 79, West Mifflin, PA 15122-0079 USA (phone 412-476-6469; Fax 412-476-5151).

'91 High-Level Radioactive Waste Management

"Public Safety and Technical Achievement " is the topic for the *1991 International High-Level Radioactive Waste Management Conference*, to be held April 28–May 3, 1991, in Las Vegas, Nevada. The Conference is sponsored by the ANS and the American Society of Civil Engineers with co-sponsor-

ship provided by several other American and European organizations. The Conference Host is the Howard R. Hughes College of Engineering, University of Nevada, Las Vegas.

The Conference will provide an international forum for presentation and discussion of scientific and technical information related to public health and safety in the management and disposal of high-level radioactive wastes. Technical and plenary sessions will cover technical issues and applications of professional disciplines in natural, engineered, social, and integrated systems.

Extended summaries of new, significant, and relevant work must be received at ANS Headquarters by **September 6, 1990**. Subject categories for contributed and invited sessions are as follows:

1 Natural Systems
- 1.1 Seismotectonics and Volcanology
- 1.2 Physical Geology and Resources
- 1.3 Saturated and Unsaturated Zone Flow
- 1.4 Geochemistry and Transport Processes
- 1.5 Climatology Issues and Assessments
- 1.6 Environmental Issues and Assessments

2 Integrated Systems
- 2.1 Transportation Systems
- 2.2 System Modeling and Performance
- 2.3 System Data Development and Assessment
- 2.4 System Technology Development and Assessment
- 2.5 System Storage

3 Engineered Systems
- 3.1 Spent Fuel and Vitrified Waste Characteristics
- 3.2 Interim Storage Facilities
- 3.3 Transportation Casks and Handling Systems
- 3.4 Waste Package and Underground Emplacement Facilities

4 Social Systems
- 4.1 Socioeconomic Impact Management and Assessment
- 4.2 Institutional Impacts
- 4.3 Public Involvement in Technical Issues
- 4.4 Regulations and Regulatory Process
- 4.5 Health Effects Assessment

Further information may be obtained from Dillard B. Shipler, Technical Program Chair, Attn: TRANSACTIONS Office, American Nuclear Society, 555 N. Kensington Ave., La Grange Park, IL 60525 USA.

1991 Joint International Waste Management Conference

This conference, jointly sponsored by the American Society of Mechanical Engineers, Korean Nuclear Society, Korea Atomic Energy Research Institute, and Korea Atomic Industrial Forum, solicits papers on high- and low-level radioactive waste management topics. The proposed program follows.

High-Level Waste Management
- Back-end Fuel Cycle Economics
- International HLW Disposal Systems
- Transportation of HLW and Spent Fuel
- Public/Political Issues for HLW Management
- HLW Disposal Performance Assessment & Tests
- Optimization of Reprocessing and HLW Operations
- HLW Spent Fuel Storage Systems and Experience
- Spent Fuel Conditioning & Packaging for Disposal
- Update on International HLW Management Technology
- Treatment of Cladding Wastes
- Acceptability of HLW Forms
- Rod Consolidation

Low- and Intermediate-Level Waste Management
- Decommissioning and Decontamination
- Intermediate-Level Waste Management
- Waste Solidification and Waste Form
- Mixed Waste (Hazardous & Radioactive)
- Liquid Radwaste Processing Experience
- Transuranic Waste Handling & Packaging
- Public Acceptance of Disposal Facilities
- Waste Management in Developing Countries
- Incineration–Development & Experience
- Waste Characterization & Performance Modeling
- Low-Level Waste Disposal–An International View
- Recent Radwaste Processing Technology Development
- Low-Level Waste Management Trends
- Dry Active Waste Processing
- Gaseous Waste Handling
- Remote Handling

Three copies of a 600–800-word summary are due by **September 12, 1990**, as they will be reviewed at the Spectrum '90 Radioactive Waste Management meeting in Oak Ridge, Tennessee, October 1, 1990. Summaries must include the author's and co-authors' complete addresses, telephone, and Fax numbers. Send high-level summaries to the Technical Program Chairman, High-Level Waste, Mr. S. C. Slate, Battelle Pacific Northwest Laboratory, P.O. Box 999, Richland, WA 99352 USA (phone 509-376-5957 or 509-375-3977, Fax 509-375-2688). Send low- and

intermediate-level summaries to Mr. Richard Baker, NUS Corporation, 910 Clopper Road, Gaithersburg, MD 20877-0962 USA (phone 301-258-5882, Fax 301-258-8764).

General questions about the conference may be directed to the General Chairman, Mr. Larry C. Oyen, Sargent & Lundy, 55 E. Monroe St., Chicago, IL 60603 USA (phone 312-269-6750, Fax 312-269-3475).

The technical sessions will be followed by a 3-day short course titled "Radioactive Waste Management for Nuclear Power Reactors and Other Facilities," in which technical experts from at least eight countries will serve as instructors. Further information may be obtained from the course director, Dr. A. A. Moghissi, The University of Maryland, Office of Environmental Health & Safety, 737 W. Lombard, Room 240, Baltimore, MD 21201 USA (phone 301-328-7055). For further information regarding the technical exhibits to be held concurrently with the technical sessions, contact the Exhibition Liaison Manager, Mr. Fred Feizollahi, Bechtel National, Inc., P.O. Box 3965, San Francisco, CA 94119 USA (phone 415-768-5636).

Calendar

Your attention is directed to the following events of interest.

August 1990

1990 EPRI Radwaste Workshop, Aug. 5-8, Boulder, Colorado, a course designed for utility low-level radwaste personnel. Contact: David Vaught (phone 704373-5495) or Carol Hornibrook, EPRI, 3412 Hillview Ave., Palo Alto, CA 94303 (phone 415-855-2022).

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).

Computational Methods in Reactor Analysis, August 13-17, 1990, Knoxville, Tennessee. Contact: T. W. Kerlin, Head of the Dept. of Nuclear Engg., University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

Monte Carlo Analysis, August 13-17, 1990, Knoxville, Tennessee. Contact: T. W. Kerlin, Head of the Dept. of Nuclear Engg., University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

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 208-526-1252).

7th ASTM-EURATOM Symposium on Reactor Dosimetry, Aug. 27-31, 1990, Strasbourg, France. Contact: G. Tsotridis, Joint Research Centre, Petten Establishment, HFR Div., Postbus 2, NL-1755 ZG, Petten, The Netherlands (phone 02246 5122, Telex REACP NL 57211, Fax 02246 1449) or G. P. Lamaze, National Inst. of Standards and Technology, Bldg. 235, Gaithersburg, MD 20899 USA (phone 301-975-6202, Telex 197 674 NBS UT, Fax 301-921-9847).

September 1990

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

3rd European Community Conference on Radioactive Waste Management and Disposal, Sept. 17-21, 1990, Luxembourg. Contact: M. L. Cecille, Commission of the European Communities, DG XII/D-2 (Arts-Lux 2/16), Rue de la Low 200, B-1049 Brussels, Belgium (phone 32/2 235 75 88).

Joint Annual Congress of the German Society of Medical Physics, the Association of Radiation Protection, the Swiss Association of Radiation Biology and Medical Physics, and the Association of German Physicians in Radiation Protection, Sept. 19-22, 1990, Goettinger, Fed. Rep. of Germany. Contact: D. Harder, Inst. f. Medizinisch Physik und Biophysik, Gosslerstr. 10 f, D-3400 Goettingen, FRG (phone 0551 396 875).

ENC '90, The World Conference and Exhibition, Looking Into Nuclear's Future in the 21st Century, Sept. 23-28, 1990, Geneva, Switzerland, organized by the European Nuclear Society in collaboration with the American Nuclear Society and the European Atomic Forum, Foratom. Contact: ENC '90 Secretariat, c/o ENS, P.O. Box 5032, CH-3001 Berne, Switzerland.

Symposium on Recent Advances in Multidisciplinary Analysis and Optimization, Sept. 24-26, 1990, San Francisco, sponsored by the U.S. Air Force and NASA. Contact: V. B. Venkayya, WRDC/FIBRA, WPAFB, OH 45433-6553 (phone 513-255-7191 or 513-255-6992).

Radiation Transport Calculations Using EGS4: A Four-Day Hands-on Course, Sept. 24-27, 1990, Ottawa, Canada. Contact: Dr. A. F. Bielajew, Div. of Physics, National Research Council of Canada, Ottawa, Canada, K1A 0R6 (phone 613-993-2715, Bitnet BLF@NRCVM01).

International Conference on Monte Carlo Methods for Neutron and Photon Transport Calculations, Sept. 25-28, 1990, Budapest, Hungary. Contact: Dr. Lázló Koblinger, Central Research Inst. for Physics, P.O. Box 49, H-1525 Budapest, Hungary (Fax 36-1-15552530).

The Safety, Status and Future of Non-Commercial Reactors and Irradiation Facilities, Sept. 30-Oct. 4, 1990, Boise, Idaho, ANS Topical Meeting, sponsored by the Idaho Section and co-sponsored by The Commission of the European Communities (CEC), Atomic Energy Society of Japan, and the Nuclear Reactor Safety Division of the ANS. Contact: Dr. Romney B. Duffey, General Chairman, The Safety, Status and Future of Non-Commercial Reactors and Irradiation Facilities, P.O. Box 51218, Idaho Falls, ID 83405-1218 (phone 208-526-9804).

Spectrum '90: Nuclear and Hazardous Waste Management International Topical Meeting, Sept. 30-Oct. 4, 1990, Knoxville, Tennessee, sponsored by ANS. Contact: Technical Program, Spectrum '90, P.O. Box 1342, Oak Ridge, TN 37831 (phone Earl McDaniel at 615-574-0439 or Karl Notz at 615-574-6632).

October 1990

9th Topical Meeting on Technology of Fusion Energy, Oct. 8-12, 1990, Chicago, sponsored by the American Nuclear Society. Contact: Technical Program Chair, Richard Mattas, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439 (phone 708-972-8673, FTS 972-8673).

18th Water Reactor Safety Information Meeting (WRSM), Oct. 22-24, 1990, Rockville, Maryland. Contact: Allen J. Weiss, Meeting Coordinator, Brookhaven National Laboratory, Bldg. 197-C, Upton, NY 11973 (phone 516-282-4473),

November 1990

Nuclear Energy Forum, Nov. 11-14, 1990, Washington, D. C., sponsored by the U.S. Council for Energy Awareness. Contact: Conference Office, U.S. Council for Energy Awareness, 1776 I Street NW, Suite 400, Washington, DC 20006-2495 (phone 202-293-0770).

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.

International Symposium on High-Dose Dosimetry for Radiation Processing, Nov. 12-16, 1990, Vienna, sponsored by IAEA. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

June 1991

5th International Symposium on Radiation Physics, June 10-14, 1991, Dubrovnik, Yugoslavia. Contact: Dr. Ante Ljubičić, ISRP-5 Chairman, Ruder Bošković Inst., P.O. Box 1016, 41001 Zagreb, Yugoslavia (phone 41 425-563 or 41 434-467, Telex 21383 irbzg yu, Fax 41 425-497).

September 1991

ICNC '91, International Conference on Nuclear Criticality Safety, September 1991, Oxford, United Kingdom. Contact: ICNC '91 Secretariat, Publicity Office, AEA Technology, Winfrith, Dorchester, Dorset DT2 8DH, United Kingdom (phone 0305 251888 ext 2739, Fax 0305 202122, Telex 41231).

October 1991

1991 Joint International Waste Management Conference, Oct. 21-26, 1991, Seoul, Korea. Contact: Mr. Larry C. Oyen, Sargent & Lundy, 55 East Monroe St., Chicago, IL 60603 (phone 312-269-6750, Fax 312-269-3475, Telex 280603).

MAY 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

CONF-880546, 561-564. . *Study on Applicability of Global Neutron Optical Model Potentials to a Nuclear Mass Range from Sodium to Gold and to Energies from 1 to 50 MeV.* . Yamakoshi, H. . 1988. . Saikon Publishing Co., Tokyo. . In: Int. Conf. on Nuclear Data for Science and Technology (1988, Mito)

Health Phys., 58(5), 645-647. . *Contribution of Neutrons to the Biological Effects in Hiroshima.* . Rossi, H.H.; Zaider, M. . May 1990

Health Phys., 58(5), 655-658. . *Constants for Calculating Ambient and Directional Dose Equivalents from Radionuclide Point Sources.* . Groenewald, W.A.; Wasserman, H.J. . May 1990

Health Phys., 58(5), 659-663. . *A Simple Approach for Deriving Photon Attenuation Factors, Mass Attenuation Coefficients, and Atomic Cross-Sections for Uncharacterized Solids.* . Kitto, M.E. . May 1990

J. At. Energy Soc. Japan, 32(1), 92-100. . *Role of Gamma-Ray Dose Rate at the Surface of Spent Fuel Shipping Cask in Calculation of Dose Rate Distribution throughout Ship by Using MANYCASK Code.* . Yamakoshi, H. . 1988. . In Japanese

J. Nucl. Sci. Technol., 27, 524-534. . *A Comparison of Gamma-Ray Point Isotropic Buildup Factors Including Fluorescence and Bremsstrahlung in Lead Using Discrete Ordinates and Point Monte Carlo Methods.* . Hirayama, H.; Tanaka, S.; Sakamoto, Y.; Subbaiah, K.V.; Harima, Y. . 1990

DESY 90-037. . *Shielding Properties of Iron at High Energy Proton Accelerators Studied by a Monte Carlo Code.* . Tesh, K.; Zazula, J.M. . April 1990. . DESY, Hamburg, FRG

ICRU Report 45. . *Clinical Neutron Dosimetry, Part I: Determination of Absorbed Dose in a Patient Treated by External Beams of Fast Neutrons.* . Nov. 1989. . ICRU

ORNL/M-1074. . *Executive Summary: Reactor Critical Benchmark Calculations for Burnup Credit Applications.* . Renier, J.-P.; Parks, C. . April 1990

ORNL/M-1121. . *Automated Sensitivity Analysis with the Gradient Enhanced Software System (GRESS).* . Horwedel, J.E. . May 1990

ORNL/TM-11514. . *Effects of X-Radiation on the LAMPSHADE Orbital Debris Satellite Shield -- II.* . Smith, M.S.; Santoro, R.T. . April 1990

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