RSIC Newsletter

No. 320   *July 1991*

Dreaming is an act of pure imagination, attesting in all men a creative power, which, if it were available in waking, would make every man a Dante or a Shakespeare.) H. F. Hedge

ANS News

New officers of the ANS elected at the annual meeting in Orlando, Florida, are: **Robert L. Long**, 1990! 91 vice president/president-elect assumed the presidency for 1991! 92, **A. David Rossin**, of Rossin and Associates was elected vice president/president-elect, and **Donald W. Edwards**, of Yankee Atomic Electric Co., was unopposed for treasurer.

Seven U.S. members of the Board of Directors will serve a three-year term ending at the June meeting in 1994. They are: **William E. Burchill**, ABB Combustion Engineering; **Harold L. Dodds, Jr.**, University of Tennessee-Knoxville; **Greg B. Frandsen**, Westinghouse Idaho Nuclear; **Maribeth E. Hunt**, Rockwell International; **Jack C. Scarborough**, U. S. Nuclear Regulatory Commission, **Jan B. van Erp**, Argonne National Laboratory; and **Loyd A. Wright**, Southern California Edison. The non-U.S. director is **Peter D. Stevens-Guille**, of Ontario Hydro.

Results of the 1991! 92 professional division elections for divisions of interest to our readers are listed below:

! **Fuel Cycle and Waste Management**) *John D. Randall*, Chair; *Lloyd W. McClure*, vice chair; *A. Scott Dam*, secretary/treasurer. New executive committee, *Morton E. Wacks*. Non-U.S. member at large, *Peter D. Stevens-Guille*. Continuing executive committee: *John L. Knabenschuh, Lloyd W. McClure, Lawrence Rutland, Alfred Schneider, Kathryn M. Tominey, James S. Tulenko*, and *Linda M. Ulland*.

! **Fusion Energy**) *Gregory A. Moses*, chair; *Donald J. Dudziak*, vice chair; *M. Yousry Gohar*, secretary/treasurer. New executive committee: *John W. Davis, Wayne A. Houlberg*, and *Dale L. Smith*. Continuing executive committee: *Paul J. Gierszewski, Ronald L. Miller, Ralph W. Moir, Kenneth R. Schultz, Don Steiner*, and *Clement P. Wong*.

! **Isotopes and Radiation**) *Ned A. Wogman*, chair; *Edward Kamykowski*, vice chair; *Amares Chatt*, secretary; *Donald A. Becker*, treasurer. New executive committee: *Royston H. Filby* and *William A. Jester*. Continuing executive committee: *Alan J. Blotcky, B. Stephen Carpenter, Robin P. Gardner, Catherine A. Grimm, Vincent P. Guinn, Robert L. Schulte*, and *Charles C. Thomas, Jr.*

! **Mathematics and Computation**) *Laural L. Briggs*, chair; *Edward W. Larsen*, vice chair; *J. Michael Doster*, secretary; *Ahmed Badruzzaman*, treasurer. New executive committee: *Yousry Y. Azmy, Yung-an Chao*, and *Warren F. Miller*. Continuing executive committee: *Marvin L. Adams, Steven P. Congdon, Barry D. Ganapol, Clarence E. Lee, Michael S. Milgram*, and *Walter L. Weaver.*

! **Nuclear Criticality Safety**) *Robert E. Wilson*, chair; *Richard E. Malenfant*, vice chair; *Warner A. Blyckert*, secretary; *Donna M. D'Aquila*, treasurer. New executive committee: *Denelle E. Friar, John A. Schlesser*, and *Dennis A. Tollefson*. Continuing executive committee: *Francis Barbry, George H. Bidinger, William A. Boyd, Robert D. Busch, Robert C. McBroom*, and *Lester M. Petrie.*

! **Nuclear Reactor Safety**) *Robert A. Bari*, chair; *David A. Carlson*, vice chair; *Wayne K. Lehto*, secretary/treasurer. New executive committee: *Douglas W. Croucher, David Squarer*, and *Edward A. Warman.* Continuing executive committee: *Robert A. Bari, William E. Burchill, David D. Carlson, Annick Carnino, J. M. Courtaud, Mario H. Fontana, Donald N. Grace, John R. Ireland, Wayne K. Lehto, Tim A. Leibel*, and *Ian B. Wall.*

! **Radiation Protection and Shielding**) *William C. Hopkins*, chair; *Margaret B. Emmett*, vice chair; *William T. Urban*, secretary; *Bernadette L. Kirk*, treasurer. New executive committee: *Ward W. Engle, Jr., Donald J. Dudziak*, and *Eugene Normand*. Continuing executive committee: *Jay Y. Lee, Robert C. Little, James H. Renken, Richard M. Rubin, Robert T. Santoro*, and *Leon West, Jr.*

! **Reactor Physics**) *Harold F. MacFarlane*, chair; *James A. Lake*, vice chair,; *Charles T. Rombough*, secretary; *Yuri Orechwa*, treasurer. New executive committee: *Carol Atkinson, David J. Diamond, Mickey R. Killgore*, and *Dale B. Lancaster*. Continuing executive committee: *Robert J. Breen, Dan G. Cacuci, Alberto L. Casadei, Thomas J. Downar*, and *Max Salvatores.*

Trubey Retires

The Radiation Shielding Information Center honored David K. Trubey with a party on the occasion of his retirement after 38 years of service with the Oak Ridge National Laboratory. Dave began his work at the laboratory in the Neutron Physics Division in 1953. In 1962, Dave participated in the founding of RSIC where he helped develop the concepts of an information analysis center. He was a major participant in the development of the first computer-based information retrieval system at Oak Ridge before it was generally accepted as a research resource. He continued to guide our activities as manager from 1964 to 1970. He spent one year establishing the ORNL-NSF Environmental Information Program. He returned to RSIC in 1971 and served as a valuable foundation for all of RSIC's activities. He has been a member of the American Nuclear Society since 1958 and the Health Physics Society since 1980. As a member of the ANS he has served on the Standards Committee in some capacity since 1972 and is currently the chairman of the ANS-6, Radiation Protection and Shielding Subcommittee.
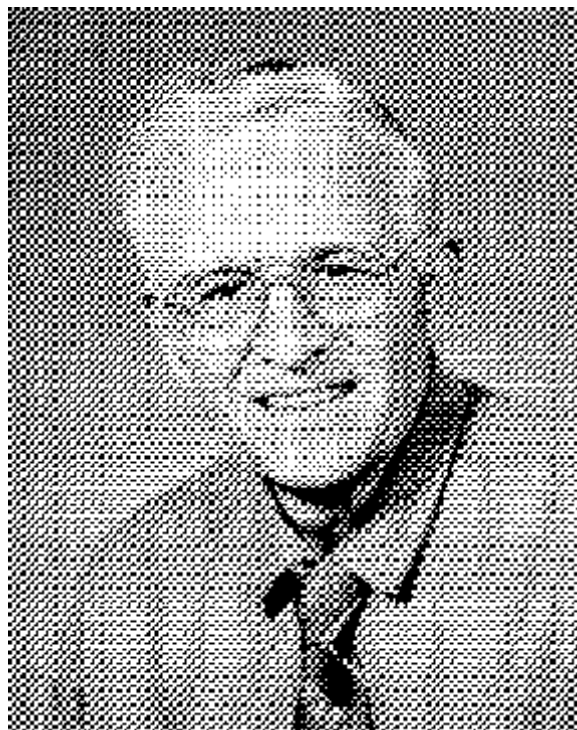
Dave Trubey

Dave was elected Fellow of the ANS in 1976 and received the Radiation Protection and Shielding Division Award for Outstanding Service and Technical Achievement in 1983.

During the last month Dave has been recognized with two awards which were acknowledged at his retirement party and will be formally presented later.

The Radiation Protection and Shielding Division awarded the prestigious Rockwell Award to Dave for his monumental influence on many areas of shielding over an exceptionally productive career. He has developed and promoted standards, new shielding methodologies, and produced important cross section and buildup factor data. As co-founder of RSIC he has been influential in bringing the shielding community together and in providing invaluable services to all shielders around the world. He served as chairman of ANS-6 for 19 years, fostering the development of many important shielding standards. Dave has also been an active supporter and tireless worker for our Division.

Dave has been also been chosen as the recipient of the 1992 Standards Service Award which will be presented at the Annual Meeting in November. The citation reads as follows.

The American Nuclear Society Standards Service Award is hereby presented to

David K. Trubey

in recognition of his notable and sustained contributions to the Society's standards program, particularly for his leadership as chairman of the Radiation Protection and Shielding Subcommittee, in the development of numerous standards, and in the activities of the parent consensus committee.

Dave and his wife, Jean, are now living in Florida. However, he will continue to be in touch with RSIC as a consultant. Dave was presented with a notebook which included comments from colleagues and friends. If you were unable to send your comments in time for the party, you may still send them in care of RSIC. They will be included in Dave's book.

A CLOSER LOOK AT EMAIL

Our user/contributors have several options for contacting RSIC. Among them are electronic mail networks and Telex services.

We need your help. Many of the messages we get go through several networks to get here and the identity of the original sender is buried among messages from these networks (see example 1, the names and other data in the examples used have been changed to protect the innocent). Many of the messages we receive are from individuals new to RSIC and may require a response by mail. Unfortunately, we have to make an educated guess about where the message originated. Our response may be delayed because the address is incomplete.

Please send your electronic mail as you would a letter with the name and address of the sender clearly distinguishable from the extraneous stuff as in example 2. Clearly identify the address and, if you expect a reply by electronic mail, clearly identify your email address. You might consider including your phone/Fax number as well. If your message originates outside the United States, please include the country in the address.

Alice F. Rice, editor

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Received: from rip.edu (128.113.1.7) by epic.epm.ornl.gov (tcp 1.00, AOS/VS 7.68)
    id AB00031; Mon, 17 Jun 91 17:07:50 edt
Received: from sub.aix.rip.edu (aix01.aix.rip.edu) by rip.edu (4.1/SMHUB25);
    id AA27708; Mon, 17 Jun 91 17:08:46 EDT for pdc@epic.epm.ornl.gov
From: gibson s cho <csgib@rip.edu>
Received: by sub.aix.rip.edu (5.61-AIX-1.2/RIP-ITS-SUB10-AIX);
    id AA162304; Mon, 17 Jun 91 17:10:01 -0400 for pdc@epic.epm.ornl.gov
Date: Mon, 17 Jun 91 17:10:01 -0400
Message-Id: <9106172110.AA162304@sub.aix.rip.edu>
To: pdc@epic.epm.ornl.gov

Hello!
I want to get CCC-546/MAACS computer code(ibm RS/6000 version).
We have a IBM RS/6000 model 320 running AIX 3.1.
How can I obtain a copy of that code?
Thanks in advance.
-------------------------------------------------------------
e-mail : csgib@rip.edu
```

Example 1. Where, oh where do I send the reply?

```
Received: from oaunx1.CTD.ORNL.GOV by epic.epm.ornl.gov (tcp 1.00, AOS/VS 7.68)
    id AL00025; Mon, 17 Jun 91 17:27:54 edt
Received: by oaunx1.CTD.ORNL.GOV (5.57/Ultrix2.4-C)
    id AA11640; Mon, 17 Jun 91 17:30:07 -0400
Date: Mon, 17 Jun 91 17:30:07 -0400
Received: from umcgate by oaunx1 via MR/STC10 with conversational-MRIF;
    Mon, 17 Jun 91 17:30:06 -0400
Posted: Mon, 17 Jun 91 17:28:11 -0400
Sender: "bitnet%ctk5907@tamsigma"@oaunx1.ctd.ornl.gov
From: "BITNET%\"CTK5907@TAMSIGMA\"" <"bitnet%ctk5907@tamsigma"@oaunx1.ctd.ornl.-
gov>
Message-Id: <01827171601991/503595@STC>
To: pdc@oaunx1.ctd.ornl.gov
Subject: TWODENT request

Received: From TAMSIGMA(CTK5907) by ORNLSTC with Jnet id 4483
          for PDC@ORNLSTC; Mon, 17 Jun 91 17:28 EST
Date:     Mon, 17 Jun 91 16:26 CDT
From:     <CTK5907@TAMSIGMA>
Subject:  TWODENT request
To:       pdc@ornlstc
Original_To:  JNET%"pdc@ornlstc"

From: Charles Kellerman (Bitnet CTK5907@TAMVENUS)
      Gabriel Horn (Bitnet G0R4990@TAMVENUS)

      Department of Nuclear Engineering
      Texas A&M University
      College Station, TX 77843-3133

We are requesting information on the source code for the program TWODENT.  We
are interested in acquiring the code and need to know what machines and
operating systems it is available for.

Your response will be greatly appreciated.

Thankyou.
```

Example 2. Note that the date the message originated is included as well a subject line. The sender's name is followed by a bitnet address.

CHANGES TO THE COMPUTER CODE COLLECTION

During the month seven changes were made to the computer code collection. One new code system was packaged and added to the collection, three existing code packages were extended with additional hardware versions, and three code packages were replaced with newly frozen versions. One change resulted from a foreign contribution.

CCC-200/MCNP 4

A personal computer version of this general purpose Monte Carlo neutron and gamma-ray transport code system was contributed by Experimental and Mathematical Physics Consultants, Gaithersburg, Maryland. The MCNP4/PC code requires an 80386/387 computer with at least 4 MB memory, 30 MB of hard disk space, and DOS 3.3 or later. Executables were created using the Lahey F77L-EM/32 Fortran Compiler and Lahey/Ergo OS386 DOS Extender. The package is distributed on 20 DS/HD (1.2 MB) diskettes. This version replaces all previous PC versions of MCNP. The mainframe package is available on either one 6250-bpi, 9-track tape or one DC 6150 cartridge tape (150 MB). References: LA-7396-M, Rev. 2 (September 1986), MCNP3B Newsletter (July 1988), MCNP4 Newsletter (April 1991), and informal notes. Fortran 77; Cray, IBM, UNIX workstations, VAX (A); PC 386 (B).

CCC-331/EGS4

The National Research Council of Canada, Ottawa, Canada, has contributed a new hardware version of this Monte Carlo code system for simulation of the coupled transport of electrons and photons. This new UNIX version runs on Sun Sparc 1 workstations using the Sun Fortran compiler, Version 1.2. It is transmitted on one 6150 DC tape cartridge (150 MB). Reference: Errata, Informal notes, SLAC-265, PIRS 042, SLAC TN-87-4. Fortran IV, Fortran 77, IBM 3081, VAX 11/750 (A); IBM PC-386 (B); Sun Sparc 1 (C).

CCC-543/TORT

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

Cray and IBM RISC System/6000 versions are provided. TORT is operable with 100% Fortran. Optional assembler routines provide added speed on Cray computers, and two optional C routines provide time, date, and location information in the IBM version. On Cray, UNICOS version 5 was used with the CFT77 compiler; on IBM, AIX version 3 was used with the XLF compiler. The package is available on either DC 6150 tape cartridge or 2 DS/HD (1.2 MB) diskettes. References: ORNL-6268 (November 1987). ORNL-5851 (July 1982), ORNL/TM-8362 (Sept. 1982), ORNL/TM-9919 (April 1986). Fortran, CAL, C; Cray and IBM RISC/6000.

PSR-146/ALICE91

Lawrence Livermore National Laboratory, Livermore, California, contributed a newly frozen version of this statistical model code system with fission competition. ALICE91 calculates precompound decay via Hybrid and GDH models with multiple precompound decay algorithms, single and double differential spectra, and reaction product cross sections. ALICE91 includes options for shell dependent level densities and an option to use systematics for angular distributions. The new version also includes gamma-ray competition with particle decay modes. Source files are included for both Cray/CTSS which uses the CIVIC compiler and Cray/UNICOS which uses CFT77. One

DS/HD (1.2 MB) diskette is required for transmittal. Version (B) of ALICE-87 for personal computers was not modified. References: UCID-20169 (Sept. 1984), UCID-19614 (November 1982), *Phys. Rev. C*, 28(4), 1475! 1492, and Informal Notes. Fortran 77; Cray (A), IBM PC (B).

PSR-171/NJOY91

Los Alamos National Laboratory, Los Alamos, New Mexico, contributed a newly frozen version of this code system for producing pointwise and multigroup cross sections from ENDF/B evaluated nuclear data, including the latest U.S. library, ENDF/B-VI. NJOY91 can work with neutrons, photons, and charged particles, and can produce libraries for a wide variety of particle transport and reactor analysis codes. This new release includes many bug fixes, major improvements in several modules (especially MATXSR and ACER) and some new capabilities. UPD, a portable update emulator, is included in the package to implement and maintain NJOY91. A formal document for NJOY91 has not yet been published but should be available in about six months. The code is configured to run on Cray computers under UNICOS. Specialized updates are included for Cray/CTSS, IBM, VAX/VMS, CDC, and Sun workstations. References: Informal document (February 1991), LA-12057-MS (March 1991), LANL Memo T-2-L-10991 (June 1987), LA-9303-M (ENDF-324), Vol. I (May 1982), Vol. II (May 1982), Vol. III (October 1987), Vol. IV (December 1985), and Informal Notes (July 1989). Fortran 77; Cray (CTSS & UNICOS), VAX/VMS, SUN/UNIX.

PSR-245/UPEML 2.1

A personal computer version of UPEML 2.1 was contributed by Columbia University, New York. This CDC UPDATE emulator is capable of emulating a significant subset of the standard CDC UPDATE functions, including program library creation and subsequent modification. UPEML was written primarily to facilitate the use of CDC-based scientific packages on alternate computers such as the VAX 11/780, IBM 3081, Cray, and others. The new version runs on IBM compatible personal computers running PC-DOS or MS-DOS. Microsoft Fortran compiler, Version 5.0, was used to create the executable file. It requires 384 K of transient program memory and a math coprocessor. The package is transmitted on one DS/HD (1.2 MB) diskette. Reference: Sandia National Laboratories Memo (January 16, 1988), SAND87-0679 (August 1987), Informal notes (1991). Fortran 77; VAX, Cray, IBM, CDC (A); IBM PC (B).

PSR-308/TAM3

Oak Ridge National Laboratory contributed TAM3, which demonstrates the use of Monte Carlo methods of sensitivity and uncertainty analysis for a simple model of radium contamination in a lake. The system being simulated consists of three components: water, sediments, and fish. Once the transfers between these components are defined, the equations are solved to steady state via matrix inversion methods; and the concentrations of radium in water, fish, and sediments are calculated. The code is written in Turbo Pascal and runs on IBM PC computers. One DS/DD diskette is required for transmittal. Reference ORNL/M-517 (April 1988). PASCAL; IBM PC.

CHANGE TO THE DATA LIBRARY COLLECTION

During the month a new data library was packaged and added to the collection.

DLC-142/KERMAL

Lawrence Livermore National Laboratory, Livermore, California, contributed these libraries of KERMA factors. KENDL, the neutron KERMA factors calculated from the LLNL Evaluated Nuclear Data Library (ENDL) data file, are tabulated for 15 composite materials and for the isotopes or elements in the ENDL file from Z=1 to Z=29. The incident neutron energies range from 1.882 x 10^{-5} to 20 MeV for the composite materials and from 1.307 x 10^{-9} to 20 MeV for the isotopes and elements. KEGDL, the gamma-ray kerma factors calculated from the LLNL Evaluated Gamma-Ray Data Library (EGDL) file, are tabulated for the elements

from Z=1 to Z=30 and for 15 composite materials. The kerma factors are presented for 191 energy groups over the incident photon energy range from 100 eV to 100 MeV. The package is transmitted on one DS/HD (1.2 MB) diskette. References: UCRL-50400, Vol. 27 (Jan. 1986) and Vol. 29 (October 1986).

NCRP Report 108 Reviewed

NCRP Report 108, *Conceptual Basis for Calculations of Absorbed-Dose Distributions*, by NCRP Scientific Committee 52: Harold H. Rossi (chairman), R. G. Alsmiller, Jr., Martin J. Berger, Albrecht M. Kellerer, William C. Roesch, Lewis V. Spencer, and Mario A. Zaider, National Council on Radiation Protection and Measurements, $22.

The NCRP has published a number of reports on shielding topics, but never before such a broad one. This report might have been titled *Radiation Transport Concepts*. The emphasis is on neutrons and photons, but electrons and nucleon-meson transport are briefly treated.

In approximately 90 pages, the mathematical basis of radiation transport is given in brief form. In the preface, Warren Sinclair, President of NCRP, advises that the report contains some complicated mathematics that will be of interest to the mathematically knowledgeable, but that should not discourage those not mathematically inclined. ...Even omitting the mathematics, a broad and comprehensive understanding can be obtained. I would agree, because there is considerable discussion between most of the equations. He also mentions that the cutoff date is about 2 years ago, so that like most books, by the time they are published, it lacks the most current references. The remaining 110 pages are appendices which treat cross sections and give examples of absorbed dose and dose-equivalent calculations. The data for the cross sections and the results of the calculations are given only as graphs, so precise values cannot be determined. The examples are: neutron absorbed dose in tissue-equivalent material, shielding manned space vehicles, and neutron skyshine.

The major radiation transport calculations methods are mentioned, and a few computer codes are discussed. The discussions are so brief however, that the reader will need to look elsewhere for comprehensive information. It seemed a bit strange that Monte Carlo was hyphenated.

All in all, at the bargain price, I would recommend this report for any shielding specialist's bookshelf. The book provides many very concise discussions of basic concepts and has many enlightening graphs.

D. K. Trubey
June 1991

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. Tony A. Gabriel has been elected a Fellow of the American Physics Society For his development of analytic and numerical methods which have advanced the state-of-the-art in high energy accelerator shielding and the design of calorimeters for physics experiments.

Visitors to RSIC

During the month the following persons came for an orientation visit and/or to use RSIC facilities: *William R. Martin*, University of Michigan, Ann Arbor; and *Moshe Goldstein*, Nuclear Research Center-Negev, Israel.

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.

Advances in Reactor Physics

The ANS Reactor Physics and Mathematics and Computations Divisions Topical Meeting on *Advances in Reactor Physics* will be held in Charleston, South Carolina, March 8!11, 1992. Presentations will be made on topics of interest to the members of the Reactor Physics Division and the Mathematics and Computations Division. The featured presentation, which is being organized by Dr. H. C. Honeck, will describe the physics aspects of new production reactor concepts. Additional information may be obtained from H. C. Honeck, Computer Applications Tech., Inc., 621 Colleton Ave., SE, Aiken, SC 29801 (phone 803-649-4201).

Calendar

Your attention is directed to the following events of interest.

August 1991

Internal Dosimetry for Fixed Nuclear Facilities, Aug. 5!9, 1991, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576).

Occupational and Environmental Radiation Protection, Aug. 12!16, 1991, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

Computational Methods in Reactor Analysis, Aug. 12!16, 1991, Knoxville, Tennessee, a University of Tennessee short course held during Tennessee Industries Week. Contact: T. W. Kerlin, Head of the Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

Monte Carlo Analysis, Aug. 12!16, 1991, Knoxville, Tennessee, a University of Tennessee short course held during Tennessee Industries Week. Contact: T. W. Kerlin, Head of the Dept. of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996 (phone 615-974-2525).

First International Mixed Waste Symposium, Aug. 26!29, 1991, Baltimore, Maryland. Contact: Sheila Little, Fluor-Daniel, 3333 Michaelson, MS B4B, Irvine, CA 92730 (phone 714-975-4264).

Environmental Monitoring for Radioactivity, Aug. 26!30, 1991, in Oak Ridge, Tennessee, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576).

In-Place Filter Testing Workshop, Aug. 26!30, 1991, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

September 1991

Risk Assessment In Occupational and Environmental Health, Sept. 4!6, 1991, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-3515; Fax 617-432-1969).

Radiopharmaceutical Internal Dose Calculation Techniques, Sept. 9!11, 1991, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar, Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576).

ICNC '91, Sept. 9!13, 1991, Christ Church, Oxford, England, sponsored by AEA Technology, the OECD Nuclear Energy Agency, with cooperation from IAEA. Contact: John Bentley, 062/A32, AEA Technology Winfrith, Dorchester, Dorset DT2 8DH, England (phone 0305 203316; Fax 0305 202122).

Applied Health Physics, Sept. 9!Oct. 11, 1991, a short course sponsored by Oak Ridge Associated Universities. Contact: Registrar, Professional Training Programs, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831-0117 (phone 615-576-3576).

INEL Computing Symposium, Sept. 10!12, 1991, Idaho Falls, Idaho, sponsored by the Idaho National Engineering Laboratory. Contact: Teri Williams, EG&G Idaho, Inc., P.O. Box 1625, Idaho Falls, ID 83415-2602 (phone 208-526-9728, FTS 583-9728).

3rd International Conference on Radioactive Waste Management, Sept. 13!16, 1991, Winnipeg, Manitoba, Canada. Contact: P. D. Stevens-Guille, Ontario Hydro, 700 University Ave., Toronto, Ont., Canada MTG 1X6

(phone 416-592-6024).

35th General Session of the International Atomic Energy Agency, Sept. 13! 22, 1991, Vienna. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria (phone 222-2360).

7th International Symposium on Inhaled Particles, Sept. 16! 20, 1991, Edinburgh, United Kingdom. Contact: A. Robertson, British Occup. Hygiene Society, Ins. Occupational Medicine, Roxburgh Place, Edinburgh EH8 9SU, U.K. (phone 031 667 5131, fax 031 667 0136).

Brazilian Meeting on Reactor Physics and Thermal Hydraulics, Sept. 17! 20, 1991, São Paulo, Brazil. Contact: José Rubens Maiorino, IPEN-CNEN/SP, Caixa Postal 11049 (Pinheiros), 05499-São Paulo-SP-Brazil (phone 011 211-6011 Ext. 270; Telex 11 83592-IPEN-BR).

5th International Symposium on the National Radiation Environment (NREV), Sept. 22! 28, 1991, Salzburg, Austria, sponsored by the Commission of the European Communities and the U.S. Department of Energy, in cooperation with the IAEA. Contact: Martial Olast, DG XII-d-3 (ARTS 2/44) Rue de al Loi, 200, B-1049 Brussels, Belgium (phone 32-2-235-07-23).

Focus '91: Nuclear Waste Packaging, Sept. 29! Oct. 2, 1991, Las Vegas. Contact: David Stahl, Tech. Program Chair, SAIC, 101 Convention Center Drive., Suite 407, Las Vegas, NV 89109 (phone 702-794-7778).

25th Anniversary Conference on Radiation Protection, Sept. 30! Oct. 3, 1991, Aachen, Germany. Contact: Forschungszentrum Jülich GmbH, Tagungsbuero, Postfach 1913, 5170 Jülich, Germany.

Seminar on Storage and Disposal of Low-Level Radioactive Wastes, Sept. 30! Oct. 4, 1991, Paris, sponsored by the IAEA. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400 Vienna, Austria (phone 222-2360).

October 1991

ANS Executive Conference on Radiation Protection in Nuclear Power Plants)Lessons for the Present and a Bridge to the Future, Oct. 6! 8, 1991, New Orleans, Louisiana. Contact: ANS Meetings Department, 555 N. Kensington Ave., La Grange Park, IL 60525 (phone 708-579-8258).

19th Water Reactor Safety Information Meeting, Oct. 14! 16, 1991, Rockville, Maryland, sponsored by Brookhaven National Laboratory. Contact: Brookhaven National Laboratory, Dept. of Nuclear Energy, Bldg. 197C, Upton, NY 11973.

7th Symposium on Neutron Dosimetry, Oct. 14! 18, 1991,

Berlin, Fed. Rep. of Germany, sponsored by the Commission of the European Communities. Contact: Dr. R. Jarh, Physikalisch-Technische Bundesanstalt, Abt. 7, Bundesallee 100, 3300 Braunschweig, FRG.

First Regional Congress on Radiological and Nuclear Safety, Oct. 21! 25, 1991, Buenos Aires, Argentina, sponsored by the National Commission on Atomic Energy. Contact: Comision Nacional deEnergia Atomica, Castilla de Correo No. 40, Aeropuerto Internacional de Ezeiza, Codigo Postal No 1802, Argentina.

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).

November 1991

14th International Meeting on Reduced Enrichment for Research and Test Reactors, Nov. 4! 8, 1991, in Jakarta, Indonesia. Contact: Dr. Widjang H. Sisworo, Batan, Biro Bina Program, P.O. Box 85 Kby, Jakarta 12001, Indonesia (Telex 62354, fax 021 511-110).

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

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

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

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

February 1992

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

March 1992

1992 Topical Meeting on Advances in Reactor Physics, March 8! 11, 1992, Charleston, South Carolina, sponsored by the ANS Reactor Physics and Mathematics and Computations Divisions. Contact: Russ Ferrara, Westinghouse Savannah River Co., Savannah River

Laboratory, Bldg. 786-1A, Room 5, Aiken, South Carolina 29808 (phone 803-725-8233).

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

April 1992

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

May 1992

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

June 1992

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

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

July 1992

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

August 1992

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

September 1992

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

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

April 1993

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

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.

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Hussein, E.M.A. . February 1990

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