# RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

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*If one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with a success unexpected in common hours.* *. . . Henry Thoreau*

## ANNUAL NEWSLETTER QUERY RESPONSE

The arrival of your copy of the *RSIC Newsletter* indicates that we received your response to the annual distribution query, for which we thank you. The names of 780 persons were removed from the list and were so notified. Approximately ten persons/day (a current total of 56) call or write asking to be reinstated. The current mailing directory contains 947 names.

We regret the inconvenience the query causes to our readers. Since we do not levy a subscription fee for the newsletter, the query is the only method we have of keeping our distribution within manageable limits. We also depend on the information contained in your response to evaluate our usefulness to you and to our financial sponsors. We appreciate your cooperation.

## MONTE CARLO METHODS SEMINAR-WORKSHOP PLANNED IN APRIL 1980

A 3-day RSIC Seminar-Workshop on the "Theory and Application of Monte Carlo Methods" is planned for the week of April 21–25, 1980 in the Oak Ridge, Tennessee area.

The seminar will last one and one-half days and will feature invited and contributed presentations on the theory and application of Monte Carlo methods for radiation transport problems in shielding and reactor physics. The proceedings will be published as an RSIC report.

The workshop will occupy one and one-half days and will concentrate on the TRIPOLI-II Monte Carlo system developed by the CEA/CEN/Saclay SERMA Shielding Laboratory, Gif-sur-Yvette, France. The TRIPOLI-II Monte Carlo code represents many years of development and successful application to a wide variety of problems in France. A particularly important recent development with this system is the interfacing of the code to ENDF/B formatted data and/or multigroup data in AMPX format.

Contributors of papers for the seminar should supply a title as soon as possible and a 200-word abstract by January 15, 1980. Author instructions for manuscript preparation will be supplied to contributors. The completed manuscript is due at the beginning of the seminar.

Selection of a site for the seminar-workshop is still under consideration. The choice, which will be announced in a later RSIC newsletter, is likely to be in Oak Ridge or Knoxville, Tennessee.

**Please return the last page of this newsletter as soon as possible** if you are interested in participating in the Monte Carlo Seminar-Workshop.

## GLEANED FROM THE ANS RP&S NEWSLETTER

William E. (Bill) Kreger (NRC), Chairman of the American Nuclear Society (ANS) Radiation Protection & Shielding Division, is soliciting ideas/comments/suggestions for division action of benefit to the subject R&D community. His "call" was made specifically to division officers and committee members in a recent newsletter issue, but anyone may make contributions through any of the persons listed below.

Other officers are: G. P. Lahti (Sargent & Lundy), Vice Chairman/Chairman-Elect; S. E. Binney (Oregon State University), Secretary; and D. E. Bartine (ORNL), Treasurer. The Executive Committee includes: T. R. Crites, Rockwell International; J. P. Davis, Con Ed; R. K. Disney, Westinghouse; B. A. Engholm, GA; S. A. W. Gerstl, LASL; W. R. Johnson, University of VA; M. J. Kolar, EPRI; W. F. Miller, Jr., LASL; R. W. Roussin, ORNL; and N. B. Willoughby, Bechtel.

Many important division activities are carried on by the standing committees, listed as follows with their chairmen: Nominations – Wilbur Bunch (HEDL); Program – Richard K. Disney (Westinghouse); Honors & Awards – Keran O'Brien (DOE-EML); Membership – Nelson DeGangi (MAGI); and Publications – John (Jack) C. Courtney (LSU). David K. Trubey serves as Chairman of ANS-6, Radiation Protection and Shielding Standards.

**Federal Radiation Protection Guidance For Occupational Exposures**

The Environmental Protection Agency has issued a notice in the Federal Register of September 17, 1979 (44 FR 53785) giving advance notice of proposed recommendations and future public hearings on this subject. The notice lists seven specific issues that have been covered in a review of the adequacy of protection afforded under the exposure guidance promulgated in 1960. The review has included interagency involvement. The EPA anticipates publishing its proposed recommendations in late Fall 1979, and will at that time invite public comments and announce details of public hearings to be held shortly thereafter, sponsored jointly with NRC and OSHA.

**TMI-2 Publications Issued**

Several documents have been issued as a result of the Three Mile Island accident. NUREG-0578, TMI Lessons Learned Task Force—Status Report and Short-Term Recommendations (July 1979), describes, among other things, the need to review the shielding design in areas around equipment that may contain high levels of radioactivity under accident conditions. It also recommends higher dose rate capability for certain monitors that went off scale during the TMI accident. Additional environmental monitoring capability has also been recommended as a result of the accident. NUREG-0558, Population Dose and Health Impact of Three Mile Island Accident (May 1970), reports the very small measured dose (83 mrem) at a possible occupied offsite location and a possible increase of 2 eventual mortalities in a population that will accrue over 350,000 cancer fatalities during the rest of their lifetime. NUREG-0600, Investigation into the March 28, 1979 Three Mile Island Accident by the (NRC) Office of Inspection and Enforcement (August 1979), is a very thorough documentation of the entire event.

**10 CFR Part 20, Standards For Radiation Protection**

The NRC has formed an internal task force to prepare for an eventual revision of Part 20. The revision will modernize and update the regulation, which has had many amendments during the years since its issuance. A Federal Register notice, describing the major features of the rewrite and asking for public comments, is currently in draft form in NRC. The revision process, including public hearings, will likely cover two years of future activity.

## IAEA CONSULTANTS' MEETING ON NEUTRON SOURCE PROPERTIES

In view of the considerable improvement in the accuracy and consistency of the properties of neutron sources relevant to neutron metrology achieved in recent years, the International Nuclear Data Committee at its recent meetings recommended that a meeting on Neutron Source Properties be held in 1980. In response to this recommendation, the IAEA Nuclear Data Section, with the support of the Hungarian authorities, in cooperation with the Institute of Experimental Physics of the Kossuth Lajos University acting as the host, plans to hold a Consultants' Meeting on "Neutron Source Properties" during the week of March 17–21, 1980 in Debrecen, Hungary.

In addition to highlighting current important developments in this field, the meeting will have the following specific objectives: to review the requirements and status of all properties and data on non-plasma neutron sources from thermal to 40 MeV and above; to identify the uncertainties in the properties of neutron sources and the corrections needed to improve the accuracy and consistency of neutron measurements; and to formulate specific technical recommendations for future work and its coordination.

To meet these objectives, the meeting will be organized around seven review topics, listed in the program. The review papers are to be comprehensive and concise surveys focussing on recent developments. Reviewers have been requested to include proposals for specific recommendations for needed future work, which could be discussed further at the meeting and form part of the final conclusions and recommendations. In addition to the review papers, it is expected that several papers, primarily on recent experimental developments, will be contributed.

Following the presentation and discussion of the review and contributed papers during the first part of the meeting, detailed discussions will be conducted in plenary and by working groups. Working groups will be responsible to formulate a final concise report on the present status and requirements concerning neutron source properties and data, and to issue a set of conclusions and recommendations for the measurement or evaluation of specific properties and data, with an indication of priorities and required accuracies.

Major topics included in the program are: Neutron Sources with Continuous Spectra—Radioactive Neutron Sources, Accelerator-Based White Sources (VdG, Cyclotrons, Linacs, etc.), Thermal and Epithermal Reactor Beams and Fields; Monoenergetic Sources—From Charged Particle Reactions, Reactor- and Accelerator-Based Filtered Beams.

Contributed papers on any of the topics listed in the program should be sent to the Scientific Secretary, Dr. K. Okamoto, Nuclear Data Section, IAEA (new address: Vienna International Centre, P. O. Box 100, A-1400 Vienna) so as to be received at the IAEA not later than January 31, 1980. The working language will be English; no interpretation will be available. Subject to the approval of the Agency's Publication Committee, the proceedings of this meeting, including the review papers, the working group reports, and the conclusions and recommendations are planned to be published. In addition to the seven reviewers invited to attend this meeting, other experts wishing to participate at their own cost and to present a contributed paper, should inform the Scientific Secretary not later than December 15, 1979.

## TECHNICAL BOOKS AND MONOGRAPHS

The Department of Energy Technical Information Center has just published the 1979 edition of the catalog, *Technical Books and Monographs*. It is a bibliography of books and monographs sponsored by the U. S. Department of Energy (DOE) and by the organizations brought together to form DOE, published to help meet the information needs of scientists and engineers working in energy-related fields. This catalog provides access to a large body of knowledge generated by many programs—programs as diverse as the field of nuclear medicine, the exploration of physical mechanisms at work in the environment, and the varied technologies required to realize the potential of the country's energy sources.

The catalog provides a brief descriptive statement, lists or describes the contents for the most recent publications, and indicates the availability. The more than 560 publications are grouped under the following subject categories: general reference, biology and medicine, chemistry, computers and mathematics, energy, engineering and instrumentation, environment, health and safety, isotope separation, metallurgy and materials, physics, reactors, and vacuum technology. Included in the catalog are the titles from monograph series prepared in cooperation with the American Chemical Society, American Industrial Hygiene Association, American Institute of Biological Sciences, American Nuclear Society, and American Society for Metals. In addition to the technical books and monographs, separate sections at the end of each subject category list approximately 270 recent symposium proceedings and recent bibliographies. Author, series, and title indexes are provided.

*Technical Books and Monographs* is available as DOE/TIC-4582-R14 for $3.75 from the National Technical Information Service, U. S. Department of Commerce, Springfield, VA 22161.

Revisions of the catalog will be published every two or three years. Supplements listing only new titles will be published periodically and will be available free from the Technical Information Center, U. S. Department of Energy, P. O. Box 62, Oak Ridge, TN 37830.

## UPCOMING MEETINGS

We call attention to the following upcoming meetings.

**November 1979**

*Specialists' Meeting on Calculation of 3-Dimensional Rating Distributions in Operating Reactors,* November 26–28, 1979, OECD Headquarters, Paris, France. Contact: Dr. J. Askew, United Kingdom Atomic Energy Authority, Winfrith, Dorset, United Kingdom.

**December 1979**

*Radiation Processing Conference*, December 11–12, 1979, The Fairmont Hotel, New Orleans, Louisiana. Contact: McGraw-Hill Conference & Exposition Center, 1221 Avenue of the Americas, Room 3677, New York, New York 10020. Telephone (212) 997-4930.

**August 1980**

*International Conference on Nuclear Physics,* August 24–30, 1980, University of California, Berkeley, California. Contact: ICNP, Nuclear Science Division, Lawrence Berkeley Laboratory, Berkeley, California 94720.

*Nuclear Reactor Safety Heat Transfer Summer School and Conference*, August 25–29, 1980 (Summer School), September 1–5, 1980 (Seminar), Dubrovnik Palace Hotel, Dubrovnik, Yugoslavia. Contact: Professor Naim Afgan, Scientific Secretary, ICHMT, P. O. Box 522, 11000 Belgrade, Yugoslavia; or Dr. Owen C. Jones, Jr., Thermal Hydraulic Development Division, Brookhaven National Laboratory, Building 130, Upton, New York 11973 USA.

**October 1980**

*Fourth ANS Fusion Topical Meeting,* October 14–16, 1980, King of Prussia, Pennsylvania. Contact: Bob Krakowski, Los Alamos Scientific Laboratory, P. O. Box 1663, MS 641, Los Alamos, New Mexico 87545.

## VISITORS TO EPIC

The following persons came for an orientation visit and/or to use EPIC facilities during the month of October: Jack Courtney, Louisiana State University, Baton Rouge; Augusto Brando D'Oliveira, CTA-IAE, Brazil; Herbert Goldstein, Columbia University, New York; Peter D. Johnston, OECD Nuclear Energy Agency, Paris, France; Masayoshi Kawai, NAIG Nuclear Research Laboratory, Kawasaki, Japan; Malvin H. Kalos, Courant Institute of Mathematical Sciences, New York University, New York; Conrad J. Lennon, Solutions Unlimited, Torrance, CA; Ralf-Dieter Neef, KFA-Jülich, Germany; Bert W. Rust, Computing Consultant, Oak Ridge National Laboratory; Josef J. Schmidt, IAEA, Vienna, Austria; and Uri Feldman, IADA, Haifa, Israel.

## CHANGES OF ADDRESS

The following address changes have been noted: **Magdi M. H. Ragheb** *from* University of Wisconsin at Madison *to* the Nuclear Engineering Program, University of Illinois at Urbana-Champaign; and **Suprakas C. Roy** of the Bose Institute of India *to* the Department of Physics and Astronomy, University of Pittsburgh, PA.

## CHANGES IN THE COMPUTER CODE COLLECTION

The following changes were made in October.

**CCC-228/SPAR**

The CDC version (B) of this calculation of stopping powers and ranges for muons, charged pions,

protons, and heavy ions was updated to correct errors called to RSIC attention by Northeastern University, Boston, MA and verified by the ORNL contributors. Details of the errors corrected may be requested from RSIC. FORTRAN IV; CDC 6600/7600.

**CCC-320/DOT-IV**

A newly frozen version of the DOT-IV two-dimensional discrete ordinates code system with space-dependent mesh quadrature has been furnished by the code contributor, Oak Ridge National Laboratory. This version eliminates some problem failures which occurred for particular cases in the previous version. It is recommended that users replace previous versions with this newly frozen version. IBM 360/370.

**CCC-334/FORSS**

The code system for sensitivity and uncertainty analysis was extended to include a CDC version, designated CCC-334**B**. The conversion of the ORNL IBM 360 version (CCC-334A) to CDC hardware is a contribution of the University of California at Berkeley.

**CCC-357/AIRDOS-EPA**

The estimation of radiation doses caused by airborne radionuclides in areas surrounding nuclear facilities, based on CCC-304/AIRDOS II, developed for the U. S. Environmental Protection Agency (EPA) as part of a methodology to evaluate health risks to man from atmospheric radionuclide releases, was contributed by the Oak Ridge National Laboratory. New features included in this EPA version are: (1) Atmospheric dispersion and surface deposition of released radionuclides are estimated for a function of direction and distance from a nuclear power plant or fuel-cycle facility, and doses to man through inhalation, air immersion, exposure to contaminated ground, food ingestion, and water immersion are estimated in the surrounding area; (2) A new ingestion model has been included; (3) Provision is made for specifying area sources; and (4) Calculation of buildup of daughter nuclides is possible. The location of the highest individual doses for each reference organ estimated for the area is specified in the output data. Reference: ORNL-5532. FORTRAN IV; IBM 360.

**PSR-113/STAY'SL**

The STAY'SL least-squares dosimetry unfolding code package was updated to correct an error in the calculation of the standard deviation of the unfolded spectrum. Statement number 57 SVP=SVP+TD(M)*FP(K)*FP(M), was changed to 57 SVP=SVP+2.*TD(M)*FP(K)*FP(M). This correction will, in general, cause a reduction in the standard deviation of the integrated unfolded spectrum as currently printed out. In the test case originally distributed, the standard deviation for the integrated spectrum was output as 3.636%. With the above correction, the value is 3.199%. The ORNL contributor called attention to the error. FORTRAN IV; IBM 360.

**PSR-142/MORSEC-SP**

A MORSE cross-section processing code, MORSEC-SP, was contributed by Mathematical Applications Group, Inc., (MAGI), Elmsford, New York. This code implements an option incorporated into the MORSEC cross-section module of CCC-203/MORSE Monte Carlo code package that allows the angular dependence of the multigroup transfer function to be represented by a non-negative step distribution. The MORSEC cross-section module permits the usage of either a discrete distribution or a truncated Legendre series to model th e angular dependence of the multigroup transfer function. MORSEC-SP allows the use of an always non-negative step distribution to model the transfer function angular dependence. Informal Reference by Nelson De Gangi and Frank Munno. FORTRAN IV; CDC-6600.

## CHANGES IN THE DATA LIBRARY COLLECTION

The following change was made in October.

### DLC-37/EPR

The coupled 100-group neutron, 21-group gamma-ray cross sections for EPR neutronics was updated to correct a problem with tungsten gamma-ray interaction cross sections in the higher order matrices of the 100n, 21g library. The need for correction was called to RSIC attention by the University of Texas and was verified by the ORNL contributor. The corrected version of the package has been designated DLC-37F. IBM 360/91.

## OCTOBER ACCESSION OF LITERATURE

The following literature cited has been ordered for review, and that selected as suitable will be placed in the RSIC Information Storage and Retrieval Information System (SARIS). This early announcement is made as a service to the shielding community. Copies of the literature are not distributed by RSIC. They may generally be obtained from the author or from a documentation center such as the National Technical Information Service (NTIS), Department of Commerce, Springfield, Virginia 22151.

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

**THIS LITERATURE IS ON ORDER. IT IS NOT IN OUR SYSTEM. PLEASE ORDER FROM NTIS OR OTHER AVAILABLE SOURCE AS INDICATED.**

## REACTOR AND WEAPONS RADIATION SHIELDING LITERATURE

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