RSIC Newsletter

OAK RIDGE NATIONAL LABORATORY
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FOR THE U.S. DEPARTMENT OF ENERGY

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Life, like the beginning and end of time, is a mystery. All we can ever do is push back that mystery one step further. — Ed Burnett

Make Your Plans for the 6th ICRS

The *6th International Conference on Radiation Shielding,* to be held May 16—20, 1983, in Tokyo, Japan, is a continuation of the sequence of conferences which began at Cambridge (UK, 1958). The scope of this conference covers advances in shielding and radiation protection for fission, fusion, and related facilities. Emphasis will be on practical aspects of shield design, requirements for nuclear data, and occupations exposure problems in operating power reactors.

Please refer to the July 1982 issue of the *RSIC Newsletter* for a complete list of conference topics.

In order for the full texts of invited and contributed papers (less than 10 pages) to be distributed to participants at the beginning of the conference, authors are requested to make available a photo-ready master copy, which will also be used for the publication of the proceedings, to Dr. T. Asaoka before **April 25, 1983.** After this deadline, authors are requested to bring 200 preprints by **May 16, 1983,** for distribution at the conference, together with a photo-ready master copy for the proceedings which will be published as soon as possible after the conference.

Any inquiries related to conference arrangements should be directly addressed to :

International Congress Service, Inc.
(Ref. No. CS-5-7002-85)
Chikusen Building 5F
Nihonbashi 2-7-4, Chuo-ku, Tokyo 103 Japan
Phone: (03) 272-8011
Telex: J24418
Cable: TOURIST, Tokyo
Persons in charge: Mr. T. Sakurai & Miss Y. Tanaka

NUCOR of South Africa Formed

As a result of the restructuring of South Africa's state-financed nuclear activities, the Atomic Energy Board was re-established July 1, 1982, as the Nuclear Development Corporation of South Africa (Pty) Ltd (NUCOR). The address, telephone number and telex number remain unchanged and, with the exception of matters relating to source material (uranium, etc.), the licensing of nuclear installations, the regulatory control of radionuclides and certain policy matters — which are now handled by the new overall controlling body, viz. the Atomic Energy Corporation of South Africa, Limited (AEC) — the activities and responsibilities of the former AEB have been taken over unaltered. Some changes in staff designations have been introduced, and the chief executive officer, *J. P. Hugo,* is now Managing Director. The other members of NUCOR's top management all become Assistant General Managers, with the exception of the Manager: Administration who is now Senior Manager: Administration. All previous Directors are now designated Managers, and the previous Assistant Manager: Administration (Finance) has become Manager: Administration (Finance). The erstwhile External Relations Division is now the Department of Liaison and Information.

PERSONAL ITEM

Pressesky Appointed ANS Liaison with NRC

The American Nuclear Society (ANS) has announced the appointment of **Andrew J. Pressesky** as Society Liaison with the Nuclear Regu-

latory Commission (NRC) and the Department of Energy (DOE). Prior to being appointed to this position, Mr. Pressesky retired as Director, Office of Safety, Quality Assurance and Safeguards, in the Office of the Assistant Secretary for Nuclear Energy, DOE.

VISITORS TO EPIC

During the month of August nine persons came for an orientation visit and/or to use EPIC facilities: *Desmond T. Grenfell,* British Nuclear Fuels Limited, United Kingdom; *Tariq Mustafa,* Embassy of Pakistan, Washington, D. C.; *James T. Lacatski,* University of Tennessee-Knoxville, Tennessee; *DeNise H. Widman,* and *Joe Harris,* Sandia National Laboratories; *Michael L. Gartner, Robert D. Wilson,* and *Carl J. Koizumi,* Gearhart Industries; and *Tadakazu Suzuki,* Nuclear Energy Agency, OECD, France.

CHANGES TO THE RSIC COMPUTER CODES COLLECTION

Five new code packages — one each from England, Finland, Italy, Japan, and Los Alamos National Laboratory — and a new version, contributed by England, were added to the codes collection during the month.

CCC-254/ANISN

This multigroup one-dimensional discrete ordinates transport code package with anisotropic scattering was extended to include a PRIME version (E), contributed by Electrowatt Engineering Services, Ltd., London, England. FORTRAN IV; IBM 360/370, UNIVAC 1108, CDC 6600/7600, TR-440, SIEMENS 7541, and PRIME.

CCC-320/DOT 4.2

This two-dimensional discrete ordinates radiation transport code package was updated to add new sample problem input. FORTRAN IV; IBM 360/370 and CDC.

CCC-421/TPHEX

This code package for transmission probability calculation of multigroup neutron flux distributions in systems of hexagonal cells was contributed by Technical Research Center of Finland, Helsinki, Finland. Developed particularly for calculation of flux distribution in the fuel assemblies of VVER-type reactors (Russian-built PWRs), the package can be used for any system of up to a few hundred hexagonal cells with optical thicknesses between 0.1 and 5.0. References: UDK 539.125.52 and UDK 539.125.52:519.2. FORTRAN IV; CDC CYBER 173.

CCC-425/MADONNA

This two-dimensional neutron streaming code package was contributed by Mitsubishi Atomic Power Industries, Inc., Tokyo, Japan. Arranged in a modular system, MADONNA employs a modified removal-diffusion method coupled with an albedo-transport equation to do reactor shielding calculations with various shapes of void (cylindrical duct, annular duct, and stepped or offset annuli). Multigroup cross sections based on DLC-2/100G are included in the package. Reference: "MADONNA Two-Dimensional Neutron Streaming Calculation Code," August 1981. FORTRAN IV; IBM 370/169, 3033.

CCC-426/WEERIE

A code package for the assessment of radiological consequences of airborne effluents from nuclear installations was contributed by the Central Electricity Generating Board (CEGB) Research Department in the Berkeley Nuclear Laboratories, Berkeley, England, through the OECD Nuclear Energy Agency (NEA) Data Bank, Gif-sur-Yvette, France. Devised for guidance in safety and siting aspects of nuclear installations, WEERIE begins with full fission product inventory applicable to the fuel at the time of interest. The amount of fuel involved in the incident may vary as a function of time and either a time decaying or constant fission-product inventory may be used to specify the release. The effluent in the atmosphere is dispersed from an effective stack height and allowance is made for building entrainment. Evaluation is made of the inhalation and the cloud beta-ray doses while integration over the volume of the plume leads to estimates of the cloud gamma-ray exposure. References: RD/B/N2407 and RD/B/N3337. FORTRAN IV; IBM 3033, 370/165.

CCC-428/ONEDANT

A one-dimensional, multigroup, diffusion-

accelerated, neutral-particle transport code package was contributed by Los Alamos National Laboratory, Los Alamos, New Mexico. The variably-dimensioned calculational scheme uses discrete-ordinates approximation for treating angular variation of the particle distribution and the diamond-difference scheme for phase space discretization. Negative fluxes are eliminated by a local set-to-zero-and-correct algorithm. The modular construction of the code package separates the input processing, the transport equation solving, and the post-processing functions into distinct, independently executable code modules. These modules are connected by means of binary interface files. Reference: LA-9184-M. FORTRAN IV; CDC-7600.

PSR-185/DANTE

An unfolding code system for energy spectra evaluation was contributed by ENEA/DISP — Servizio Transpori, Rome, Italy. The code evaluates activation measurements of reactor neutron spectra and unfolds the results for dosimetry purposes. A least-squares fit method is used. Up to nine activation experiments can be analyzed and up to 76 energy groups accepted. References: RT/FI(79)7 and RT/FI(79)8. FORTRAN IV; IBM 370/168.

CHANGES TO THE DATA LIBRARY COLLECTION

Two extensions and two new data libraries were added to the data library collection during the month. Contributions came from England, the International Atomic Energy Agency in Vienna, and The Netherlands.

DLC-60B/MACKLIB-IV

This 171-neutron, 36-gamma-ray multigroup kerma factor and reaction cross section data library package was updated to add a completely FORTRAN source deck for the RIPOF retrieval code. This source code, contributed by the Oak Ridge National Laboratory, can be used instead of the original RIPOF, which contains some assembler routines. This data package was also extended to include a CDC version of the original MACKLIB-IV retrieval code. The retrieval code was contributed by the University of London Reactor Center, Berkshire, England. FORTRAN IV; IBM 360/370 and CDC.

DLC-71/GAMMON

This package of activation data for fusion reactor applications and other design studies was extended to include an IBM version of the BIGAMON retrieval program. FORTRAN IV; CDC and IBM 3033.

DLC-94/IRDF-82

This international reactor dosimetry data package was contributed by the International Atomic Energy Agency, Vienna, Austria. The package contains 620-neutron-group cross sections (SAND-II format) based on the ENDF/B-V Special Purpose Dosimetry File as well as other reaction cross sections important for dosimetry applications. In addition, multigroup spectra for ten reference benchmarks are also provided. A retrieval code is provided for accessing the reaction cross sections. Reference: IAEA-NDS-41/R. FORTRAN IV; IBM 360/370.

DLC-97/DOSDAM81-82

This cross section library in a 640-group structure of the SAND-II (CCC-112) type is an updated and extended version of RSIC package DLC-81/DOSDAM77-81. Contributed by the Netherlands Energy Research Foundation, Petten (N.H.), The Netherlands, the package includes the DOSCROS81 and DAMSIG81 libraries. In combination, they provide a convenient source of evaluated data for use in determination of neutron spectra by adjustment (or unfolding) procedures or for the determination of integral parameters. The multigroup data were produced by PSR-188/ENTOSAN from ENDF/B-IV and -V and other sources. A retrieval code for listing the data is provided. References: ECN-104 and -111. FORTRAN IV; CDC.

UPCOMING MEETINGS AND COURSES

We call your attention to the following meetings and courses.

ESIS Monte Carlo Course

The European Shielding Information Service (ESIS) has announced its biennial course on radiation shielding methods to be conducted at the Joint Research Centre of the European Communi-

ties (EURATOM), Ispra, (Varése), Italy, October 25–29, 1982. Entitled "*Monte Carlo Methods and their Application to Radiation Shielding,*" the course is addressed to nuclear engineers engaged in shield design. It is intended to be a complete review of Monte Carlo techniques applied in deep penetration calculations, starting from basic principles and extending to the most recent methods and techniques. All the relevant basic elements are presented to ensure a good understanding of the method, particularly its applications to practical shielding problems.

A few advance topics are included to allow the best use of existing computer codes. Variance reduction techniques will be developed in a comprehensive fashion. The computer codes MORSE, TIMOC, and TRIPOLI will be extensively described and discussed. Participants need not be familiar with the Monte Carlo method. However, some understanding of radiation transport physics is required.

The lectures will be given in English by *Aaron Dubi* of the Ben Gurion University of the Negev, Beer Sheva, Israel; *J. C. Nimal,* Head of the Laboratory of Shielding and Reliability of CEA-Saclay, France; and *W. Matthes, Carlo Ponti,* and *Herbert Rief* of ESIS. *C. Ponti* is the Course Coordinator.

Specific topics include: a review of basic concepts; solution of the transport equation through the random walk simulation; the straightforward game, the biased game; variance reduction techniques; adjoint and importance in Monte Carlo calculations; point estimators and integral estimators; Monte Carlo codes for solving radiation shielding problems; methods for testing and plotting the geometry; traps in Monte Carlo calculations; perturbation and sensitivity analysis with the Monte Carlo Method; and contributon theory.

For information concerning registration, lodging, etc., contact the Coordinator by mail at ISPRA-Courses, Centro Comune di Ricerca, 21020 ISPRA (Varése) Italy; or directly via Secretariat ISPRA-Courses, phone 0332/781128-789839-789819, telex 380042-380058 EURI.

Radiation Issues Conference

The Atomic Industrial Forum, Inc. announces that a "Conference on Radiation Issues for the Nuclear Industry," will be held in the Royal Sonesta Hotel, New Orleans, Louisiana on October 3—6, 1982.

Issues raised fall under the major heading:

Radiation control: Session Chairman, *William J. L. Kennedy,* Vice President and Senior Engineering Manager, Stone & Webster Engineering Corporation

- Can we resolve the radiation controversy — keynote address *Edward W. Webster,* Chief, Radiological Sciences Division, Department of Radiology, Massachusetts General Hospital
- NRC activities in the regulation of radiation — *Robert B. Minogue,* U.S. Nuclear Regulatory Commission
- Radiation compensation — overview; *William G. Schafer,* Jones, Waldo, Holbrook and McDonough

Exploring the use of a *de minimis* concept in radiation protection; Session Chairman, *Morton I. Goldman,* NUS Corporation

- The need for a *de minimis* policy; *Saul J. Harris,* Union Electric Company
- Feasibility and methodology for establishing *de minimis; Joyce P. Davis,* General Physics Corporation
- NRC approach to *de minimis; Guy H. Cunningham, III,* U.S. Nuclear Regulatory Commission
- EPA approach to *de minimis; Floyd L. Galpin,* U.S. Environmental Protection Agency
- Panel Discussion

Evolving radiation protection standards; Session Chairman, *E. Linn Draper,* Gulf States Utilities Company

- United Kingdom experience with implementing ICRP Report 26; speaker to announced
- Radiation protection standards in nuclear fuel manufacturing; *Roy Nilson,* Exxon Nuclear Company, Inc.
- A viewpoint on proposed radiation protection standards; *John A. Auxier,* Oak Ridge National Laboratory

Occupational radiation protection: are we doing enough?; Session Chairman, *Lee V. Maurin,* Louisiana Power & Light Company

- NRC activities for maintaining exposures ALARA; *Frank J. Congel,* U.S. Nuclear Regulatory Commission
- Radiation protection and the female worker; *Sherry Folsom,* Southern California Edison Company
- Exposure experience with transient and temporary workers; *Andy T. Sabo,* Westinghouse Electric Corporation

Emergency planning: the potassium iodide issue; Session Chairman, *Leonard A. Sagan,* Electric Power Research Institute

- Radioiodine source term and the potential impact on the use of KI; *Anthony P. Malinauskas,* Oak Ridge National Laboratory
- FDA recommendations for KI use; *Gordon C. Johnson,* U.S. Department of Health and Human Services
- FEMA guidance for potassium iodide use in emergency planning; *Richard W. Krimm,* Federal Emergency Management Agency
- KI use in emergency planning: a state's perspective; *Margaret A. Reilly,* Pennsylvania Department of Environmental Resources
- Public health policy aspects of KI distribution; *Leonard A. Sagan*
- Panel discussion

NRC/WRSR Information Meeting

The U.S Nuclear Regulatory Commission has announced its Tenth Water Reactor Safety Research Information Meeting to be held October 12—15, 1982 at the National Bureau of Standards (NBS) in Gaithersburg, Maryland. The four day meeting will highlight progress in NRC's nuclear safety research programs accomplished over the past year. Participants will be invited to comment on the technical aspects of the papers to be presented, to discuss any insights they may have as to the need for program redirection, and to comment on related research work which may be underway in this country or abroad. Concurrent sessions covering major research areas are planned as follows:

October 12 — Integral Systems Experiments, Mechanical Engineering, Load Combinations, Seismic Safety Margins, and Human Factors Research

October 13 — Separate Effects, Instrumentation and Control, Structural Engineering, Materials Engineering, and Foreign Programs in Thermal-Hydraulics

October 14 — Analysis Development, 2D/3D Program, Materials Engineering, Severe Accident Assessment, Occupational Radiation Protection, and Electrical Equipment Qualification

October 15 — Risk Analysis, Fuel Behavior and Source Term Research, Severe Accident Sequence Analysis, Safety/Safeguards Interaction, and Process Control & Accident Mitigation

For additional information contact Ms. Barbara A. Stehlin, U.S. Nuclear Regulatory Commission, Washington, DC 20555; phone (301-427-4338).

Calendar

Please note the following meetings and/or courses.

November 1982

Training Today to Meet Tomorrow's Challenge, Holiday Inn/Genesee Plaza, Rochester, New York, November 2—4, 1982. Sponsor: Rochester Institute of Technology College of Continuing Education in collaboration with American Nuclear Society, Niagara Finger Lakes Section. For conference information contact: Harriet G. Friedstein, phone 716-475-6976 or 716-475-2803.

May 1983

Spring College on Radiation in Plasmas, Trieste, Italy, May 24—June 17, 1983. Sponsors: International Atomic Energy Agency, Vienna; United Nations Educational, Scientific and Cultural Organization, 75—Paris; International Centre for Theoretical Physics, Trieste. Contact: ICTP, Spring College on Radiation in Plasmas, P.O. Box 586, I-34100 Trieste, Italy (COMM 224281-6).

AUGUST ACCESSION OF LITERATURE

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

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

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

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