RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION • FOR THE U.S. ATOMIC ENERGY COMMISSION

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We all live under the same sky, but we don't all have the same horizon.
. . . Konrad Adenauer

NEWS ON THE FIFTH INTERNATIONAL CONFERENCE ON REACTOR SHIELDING

Registrations are beginning to come in from our announcement in last month's Newsletter. If you are planning to come, please send us your completed registration form or at least let us know in some way so that our planning will be based on realistic numbers. The conference schedule and registration was published in the February Newsletter. The technical program was in the January issue. Participants are now expected from thirty nations.

If you have special food or diet requirements, please advise Betty Maskewitz, Deputy Chairman of the Conference. Special arrangements are being made.

Conference participants are invited to attend a public workshop session on the Clinch River Breeder Reactor Saturday, April 16, 10 am - 4 pm at the University of Tennessee Union Building. This session is sponsored by the Scientists and Engineers for Appalachia.

LOWER PRIORITY FOR NUCLEAR POWER INDUSTRY STARTING IN MAY

The use of RSIC services by utilities and architect-engineers and others performing work for utilities has grown over the past few years. As you know, we have been requesting identification of areas of work from RSIC users recently. According to the latest survey, utility-related requests amounted to about 20% of the RSIC total, and yet there is no financial support for the utility-related users. An earlier Electric Power Research Institute contract has now expired. RSIC is supported by ERDA-DRDD for advanced reactors, by ERDA-DMFE for fusion-related activities, by DoD-DNA for defense applications, and by NRC for NRC-related work.

In order to control costs, RSIC faces another slowdown similar to that of late spring in 1976. Therefore, beginning in May 1977, utility-related requests will be given lower priority and filled on an as-time-is-available basis. Unless support is provided, we have to expect that such service will become less and less available. The logical organizations to provide support are EPRI or ERDA-Division of Nuclear Research and Applications. If you wish to comment on possible requirements for RSIC services, you might contact: Dr. W. Loewenstein, Director, Safety and Analysis Department, Nuclear Power Division, Electric Power Research Institute, 3412 Hillview Avenue, Palo Alto, California 94303, or Mr. Donald Erb, Assistant Director, Reactor Programs, Nuclear Research and Applications, U. S. Energy Research and Development Administration, Washington, D. C. 20545.

REPORT ON RSIC USER SURVEY

Returned copies of the *User Evaluation of RSIC Products and Services* continue to arrive in each day's mail, but the bulk of the response is in and is being processed by computer. We appreciate your cooperation and will have a report for you in the next issue of the RSIC Newsletter. We are in the process of removing from our mailing list the names of those persons who did not respond to our annual query as to whether they wished to continue to receive the newsletter and other materials. If you failed to respond at all and do not wish to be cut off our distribution, you are advised to call or write promptly.

IF YOU CHANGE YOUR ADDRESS, please notify us (including Building and Room No. where needed). *Third Class Mail* is returned to us at our expense if the addressee has moved. If your mail is returned, your name will be deleted from our distributions until we hear from you.

A more complete evaluation of RSIC as an effective information analysis center includes two parts: the user survey and an internal review by an *Ad Hoc* Advisory Committee which took place on February 7-8. Participating in the review were: Herbert E. Goldstein, Professor, Columbia University; Viktor E. Hampel, Leader, Data Management Research Project, Lawrence Livermore Laboratory; and Gerald P. Lahti, Supervisor, Shielding and Radiological Safety, Sargent & Lundy, Chicago.

ANS RP&S DIVISION CANDIDATES ANNOUNCED

The American Nuclear Society Radiation Protection and Shielding Division has announced the following candidates for 1977-78: Chairman, Wilbur L. Bunch (Westinghouse Hanford); vice chairman/chairman-elect, Siegfried A. W. Gerstl (LASL), Charles M. Huddleston (Naval Surface Weapons Center); secretary, Nancy B. Willoughby (Bechtel Power); treasurer, Bernard A. Engholm (GA), Gerald P. Lahti (Sargent & Lundy); executive committee (three to be elected): Richard K. Disney (Westinghouse), W. Reed Johnson (U of Virginia), Ronald L. Kathren (Portland General Electric), Michael J. Kolar (Commonwealth Associates), Robert E. MacFarlane (LASL), Robert W. Roussin (ORNL-RSIC).

PERSONAL ITEMS

W. R. (Bill) Yucker is returning to California with the McDonnell Douglas Astronautics Company in Huntington Beach, and to radiation transport work, after 1.5 years in Huntsville, Alabama.

Ya-Chang Chiu is now in charge of radiation shielding work in the Institute of Nuclear Energy Research on Taiwan.

Robert E. (Bob) Seamon is on leave from LASL to the Nuclear Data Section of IAEA in Vienna to work on atomic and molecular data for fusion applications.

VISITORS TO RSIC

The following persons came for an orientation and/or to use RSIC facilities during the month of February:

William E. Loewe, Steven J. Patenaude, and Carol Pollock, Lawrence Livermore Laboratory, Livermore, California; Raphe LaBauve, Douglas Muir, Robert E. Seamon, and Leona Stewart, Los Alamos Scientific Laboratory, Los Alamos, New Mexico.

CHANGES IN THE COMPUTER CODE COLLECTION

The following changes were made during February.

CCC-142/MERCURE-4

This kernel integration code, straight-line attenuation in a three-dimensional geometry package, was updated to include a new version contributed by CEA Nuclear Research Center, Fontenay-Aux-Roses through the NEA Computer Programme Library, Ispra (Varese), Italy. FORTRAN IV; IBM 360.

CCC-286/AISITE II

This reactor siting code package (10 CFR 100 criteria); internal and external dose calculations; determination of gross fission products and provision for 3 isotope release models was contributed by Atomics International via Argonne Code Center (abstract 172), and the OECD Nuclear Energy Agency's Computer Programme Library who tested and provided this IBM 360 version. Although this model is dated, it has been and continues to be frequently used and RSIC has been asked to include it in the code collection. FORTRAN IV; IBM 360. References: NAA-SR-9982, and NAA-Sr-memo-9069.

CCC-287/PROB

This multigroup one-dimensional transport code, collision probability method, was contributed by the National Commission of Atomic Energy, Department of Reactors, Buenos Aires, Argentina through the NEA-CPL, Ispra (Varese) Italy. Reference: CNEA-RE-58 (June 1972). FORTRAN IV; IBM 360.

CCC-289/SKYSHINE

This Monte Carlo integration of 6-MeV gamma-ray transmission, reflection, and air scattered data to compute dose rates outside concrete-steel buildings was contributed by Radiation Research Associates, Fort Worth, Texas. Reference: RRA-N7608 (August 1976). FORTRAN IV; IBM 360.

CCC-290/TRIGON

This two-dimensional multigroup diffusion code for trigonal or hexagonal mesh was contributed by Nuclear Engineering Laboratory, Technical Research Centre of Finland. Reference: VTT-YDI-1 (May 1973). FORTRAN V; UNIVAC-1108.

CCC-291/BMC-MG

This multigroup Monte Carlo kernel integration neutron and gamma-ray shielding calculational code system for plutonium was contributed by Battelle Pacific Northwest Laboratories, Richland, Washington. Reference: BNWL-1855. FORTRAN IV; CDC 6600.

PSR-103/FBSAM

This computer memory to magnetic disk data manipulator was contributed by Oak Ridge National Laboratory. Reference: ORNL-TM-5199 (January 1976). FORTRAN IV; IBM 360/370.

PSR-104/SECA

This evaluator of angular bounds for a two-dimensional symmetric Gaussian quadrature set was contributed by Roy Castelli and Ed Ochoa, New York, N.Y. The precise bounds are needed by the source routine of a Monte Carlo code to use fluxes generated by discrete ordinates codes. The igloo approximation does not always work. Reference: Roy A. Castelli and Ed Ochoa, "An Analytical Technique for Evaluating the Angular Bounds for a Two-Dimensional Symmetric Gaussian Quadrature Set," Informal notes (October 1976).

RSIC GRAB BAG

We offer the following extra copies of documents on a first-come basis. We will honor requests until the supply is exhausted. If you want to add to your reference shelf, please order by report number.

ORNL-4515, *Neutron Elastic- and Inelastic-Scattering Cross Sections for ^{56}Fe in the Energy Range 4.19 to 8.56 MeV*, W. E. Kinney and F. G. Perey.

ORNL-4516, *Al Neutron Elastic- and Inelastic-Scattering Cross Sections, From 4.19 to 8.56 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4518, *Neutron Elastic- and Inelastic-Scattering Cross Sections for Na in the Range of 5.4 to 8.5 MeV*, F. G. Perey, and W. E. Kinney.

ORNL-4519, *Calcium Neutron Elastic- and Inelastic-Scattering Cross Sections from 4.0 to 8.5 MeV*, F. G. Perey, and W. E. Kinney.

ORNL-4523, *Nickel-60 Neutron Elastic- and Inelastic-Scattering Cross Sections from 6.5 to 8.5 MeV*, F. G. Perey, C. O. Le Rigoleur, and W. E. Kinney. **ORNL-4549**, *Neutron Elastic- and Inelastic-Scattering Cross Sections for Co in the Energy Range 4.19 to 8.56 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4550, *Neutron Elastic- and Inelastic-Scattering Cross Sections for Mg in the Energy Range 4.19 to 8.56 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4551, *V Neutron Elastic- and Inelastic-Scattering Cross Sections from 4.19 to 8.56 MeV*, F. G. Perey, and W. E. Kinney.

ORNL-4552, *Neutron Elastic- and Inelastic-Scattering Cross Sections for Yttrium in the Energy Range 4.19 to 8.56 MeV*, F. G. Perey, and W. E. Kinney.

ORNL-4780, *Neutron Elastic- and Inelastic-Scattering Cross Sections for Oxygen in the Energy Range 4.34 to 8.56 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4803, *Tungsten Neutron Elastic- and Inelastic-Scattering Cross Sections from 4.34 to 8.56 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4810, *Natural Titanium Neutron Elastic and Inelastic Scattering Cross Sections from 4.07 to 8.56 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4908, *^{63}Cu and ^{65}Cu Neutron Elastic and Inelastic Scattering Cross Sections from 5.50 to 8.50 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-4909 (ENDF-206), *^{206}Pb, ^{207}Pb, and ^{208}Pb Neutron Elastic and Inelastic Scattering Cross Sections from 5.50 to 8.50 MeV*, W. E. Kinney, and F. G. Perey.

ORNL-TM-2423, *Comparison of Monte Carlo Calculations with Measurements of Fast-Neutron Dose Transmitted from a Beam Source Through a Snap-2 LiH Shield*, V. R. Cain and K. D. Franz.

ORNL-TM-2439, *High-Energy (< 18 GeV) Muon Transport Calculations and Comparison with Experiment*, R. G. Alsmiller, Jr., and J. Barish.

ORNL-TM-2558, *AVKER: A Program for Determining Neutron Kerma Factors for Use in Energy Deposition Calculations*, M. Solomito, J. J. Ritts, and H. C. Claiborne.

ORNL-TM-3284, *Al(n,xγ) Reactions for* $5.3 \leq E_n \leq 9.0$ MeV, J. K. Dickens

ORNL-TM-3320, *Primary- and Secondary- Particle Contributions to the Depth-Dose Distribution in a Phantom Shielded from Solar-Flare and Van Allen Protons*, R. T. Santoro, H. C. Claiborne, and R. G. Alsmiller, Jr.

ORNL/TM-5535, *Analysis of a Neutron Scattering and Gamma-Ray Production Integral Experiment on Oxygen for Neutron Energies from 1 to 15 MeV*, S. N. Cramer, E. M. Oblow.

FEBRUARY 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.

Special bibliographies and selected computer-printed abstracts of the literature in the RSIC system are available upon request. The Selective Dissemination of Information (SDI) Service is available by submitting a list of subject categories defining the recipient's interests.

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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The Accuracy of the Diffusion Theory Component of Removal-Diffusion Theory.
Donnelly, I.J.
March 1976
Dep., NTIS (U.S. Sales Only)

AFWL-TR-75-214; AD-A-024896
Aircraft Ionizing Doses and Dose Rates from Radioactive Clouds and Fallout. Final Report.
Patrick, R.P.; Arnett, G.D.
April 1976
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ARH-SA-275
Fusion Reactor Radioactive Waste Management.
Kaser, J.D.; Postma, A.K.; Bradley, D.J.
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Proceedings of ERDA Symposium on X- and Gamma-Ray Sources and Applications Held in Ann Arbor, Michigan, May 19-21, 1976.
ERDA, Washington, D.C.; Edsel B. Ford Inst. for Medical Research, Detroit, Mich.; Michigan Univ., Ann Arbor; Michigan Memorial Phoenix Project; Ford Motor Co., Dearborn, Mich.; General Motors Research Labs., Warren, Mich.
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CONF-760715-P1
International Conference on the Interactions of Neutrons with Nuclei.
Proceedings of the Meeting, Held at the University of Lowell, Lowell, Mass., July 6-9, 1976.
Sheldon, E. (Ed.)
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Proceedings of the Second Topical Meeting on the Technology of Controlled Nuclear Fusion. Vol.I.
Kulcinski, G.L.; Burleigh, N.M. (Eds.)
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CONF-760935-P1, pp.21-45
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Stacey, W.M.,Jr.; Abdou, M.A.; Bertoncini, P.J.; et al.
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General Atomic Company Experimental Power Reactor Conceptual Design.
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Results and Conclusions from ORNL Tokamak Experimental Power Reactor Conceptual Studies.
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TETR - A Tokamak Engineering Test Reactor to Qualify Materials and Blanket Components for Early DT Fusion Reactors.
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Tokamak Engineering Technology Facility.
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The Impact of Neutron Wall Loading on the Cost of a Tokamak Fusion Power System.
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What is Past is Prologue: Future Directions in Tokamak Power Reactor Design Research.
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A Technology Assessment of Laser Fusion Power Production.
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Technology Problems in Theta Pinch Reactors.
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Interface of the Controlled Nuclear Fusion Program with Utilities.
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Conceptual Design of the JAERI Demonstration Fusion Reactor.
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Design Considerations for a Noncircular Tokamak Demonstration Plant.
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A Brief Review of the Fusion-Fission Hybrid Reactor.
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A Conceptual Design Study for a Laser Fusion Hybrid.
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Neutronic Study of a Laser Fusion Hybrid Reactor Design.
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Mirror Hybrids - A Status Report.
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The Quality of Fissile Fuel Bred in a Fusion Reactor Blanket.
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Design of a Beam-Driven Tokamak for Depletion of Actinide Wastes.
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Some Systems Economic Considerations of Pure Fusion Breeders of Fissile Nuclear Fuel.
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The Effect of Processing Fabrication Costs on Design Choices for Hybrid and Symbiotic Fusion Reactor Blankets.
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Breeding of Fissile Fuel with Linear Fusion Sources.
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Neutronic and Photonic Analysis of UWMAK-III Blanket and Shield in Noncircular Toroidal Geometry.
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Neutronic Data Consistency Analysis for Lithium Blanket Shield Design.
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Fission-Rate Distributions in Lithium and Hybrid Fusion Blanket Assemblies.
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Status of the Jet Project and Its Supporting Technological Programme.
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Calculation of Gamma-Ray Response Matrix for 5-cm NE-213 Organic Liquid Scintillation Detector. Final Report, 9 Jan. 1973 - 30 May 1975.
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May 30, 1975
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