

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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*Many of the supposed increasers of knowledge
have only given a new name, and often a worse,
to what was well-known before. --- Hare*

LINKAGE OF ENDF/B TO TRANSPORT CODES

A. E. Profio (Gulf General Atomic) and D. K. Trubey (RSIC) have been asked by the Shielding Subcommittee of the Cross Section Evaluation Working Group to collect and evaluate information on the current and planned use of ENDF/B cross section data in shielding or radiation transport codes. We know of some existing and planned routines which provide such linkage, but we would like to know of others. Therefore, we request that all those who have linkage routines to transport codes or who plan to code such routines please contact D. K. Trubey at RSIC. We plan to send questionnaires to those who respond to supply the information desired.

NEWS FROM JAPAN

We received a very informative letter from Dr. Iwao Kataoko of the Ship Research Institute, Tokyo, Japan, and are pleased to print excerpts of it as follows:

It gives me pleasure to write concerning two recent activities in the shielding circle of Japan in which you and the readers of the RSIC Newsletter may be interested.

The first is the activities in Japan regarding the shielding data compilation. Though there have been several efforts to collect and prepare nuclear data libraries for shielding programs at individual organizations, the Special Committee on Radiation Shielding (Chairman, Dr. M. Nakata, Ship Research Institute) of the Atomic Energy Society of Japan has also been working on the compilation of data and the evaluation of the format for the shielding data file as a part of the committee's activities.

After discussions at meetings of the committee, in March of 1967 a working group on the shielding data compilation was organized. The effort was mainly devoted to urgent needs of shielding data collection and also to evaluate the compilation format.

In January, 1969, the working group was reorganized as the shielding data subcommittee in the Special Committee on Radiation Shielding. The present members of the subcommittee are as follows:

- I. Kataoka, Chairman, Ship Research Institute
- Y. Harima, Tokyo Institute of Technology
- Y. Higashihara, Power Reactor and Nuclear Fuel Development Agency
- Y. Kanemori, Japan Atomic Energy Research Institute
- K. Kato, Japan Atomic Energy Research Institute
- I. Komatsu, Nippon Atomic Industry Group Co.
- M. Ookubo, Mitsubishi Atomic Power Industries, Inc.
- K. Takeuchi, Ship Research Institute
- Y. Tanaka, Kawasaki Heavy Industry
- S. Uchida, Hitachi
- H. Yamakoshi, Ship Research Institute
- T. Yoshimura, Ship Research Institute

Recently the subcommittee advanced a proposal for the format of the data file. At present we are working on a survey of the existing nuclear data which will be useful for shielding calculations. Since there are many excellent efforts of evaluated nuclear data files for reactor calculations, such as the ENDF/B and the UK library, we should avoid a redundant effort and concentrate on data for shielding applications. The subcommittee has a close connection with the Japan Nuclear Data Committee (Chairman, Dr. M. Momota, Japan Atomic Energy Research Inst.).

The second topic is the construction of a fast source reactor which is expected to be one of the most useful tools for shielding research. The Research Institute of Nuclear Science, Faculty of Engineering, University of Tokyo, is constructing the University of Tokyo Fast Source Reactor (temporary designation) as a three-year project starting in April, 1968. The reactor will come to critical before the end of 1970.

The principal characteristics of the reactor:

1. Thermal output - max. 2 kW
2. Neutron flux density - max. 0.8×10^{12} n/cm²-sec
3. Fuel - Uranium metal about 28 kg
 - 93% enrichment
 - 124 mm dia. X 125 mm height

4. Blanket-depleted Uranium metal about 100 mm thick
5. Inner reflector - lead about 100 mm thick
covered by 10 mm steel
6. Cooling - air, forced circulation

The unique feature of the reactor is the mobility of the core assembly....Each of three positions has various experimental holes. A cave in the heavy concrete shield is located at the No. 2 station mainly to accommodate shielding experiments. It faces upon the core and blanket through the inner and outer lead reflector. The outer reflector can be removed if necessary.

A particle accelerator will be installed for the pulsed operation of the reactor at critical or subcritical condition as well as for independent operation of the accelerator. Pulsed operations of the reactor will be tried at the second stage of the experiments. A 400 m flight path and some shorter ones are planned. Though the source intensity of the core neutrons would not be sufficient for a deep penetration experiment, the installation is expected to afford an experimental facility for fundamental shielding research.

Iwao Kataoka
Ship Research Institute

SEMINAR-WORKSHOP
ON GROUP CROSS SECTIONS
IN THE AUTUMN

Preliminary plans are being made for an RSIC-sponsored seminar-workshop on the subject of group cross sections for radiation transport codes for October 1 - 3 in Oak Ridge. The title of the conference will be "MULTIGROUP CROSS SECTION PREPARATION: Theory, Technique, and Computer Codes." Contributions to the seminar will be welcome. Further information will be in this Newsletter at a later date.

ADDITIONAL INFORMATION
ON DLC-2 NEUTRON GROUP CROSS-SECTION LIBRARY*

(1) A new option in the retrieval program for the DLC-2 neutron group cross-section library makes it possible to produce cross sections in card-image format suitable for input into the DTF and DTF-IV codes.

* See RSIC Newsletter No. 49 (Dec. 1968).

(2) To permit routine use on machines other than the IBM-360, the retrieval program has been modified to eliminate the FORTRAN "T" format.

(3) Although thermal-neutron cross-section data is not present in the library now, such data can be added by considering group 100 to be thermal. Downscatter data to this group is already present.

Detailed information concerning the above is available upon request.

ADDITIONAL INFORMATION
ON THE USE OF ANISN
AVAILABLE

In response to a number of inquiries, additional information on the use of ANISN to reduce the number of groups in a cross-section library and to reduce the memory requirements to manage large cross-section sets has been prepared and is available from RSIC as CF-69-5-20, by R. W. Roussin. The latter involves the auxiliary routine TAPEMAKER, which was contributed by Ward W. Engle, Jr., Union Carbide Computing Technology Center, and is being made a part of the CCC-82/ANISN package. It is also available separately.

AMERICAN NUCLEAR SOCIETY MEETS
IN SEATTLE, JUNE 15-19

The American Nuclear Society will hold its 15th annual meeting June 15 - 19, 1969, in Seattle, Washington. Shielding sessions include: *Protection Criteria and Techniques of Weapons Shielding, Fast Neutron Spectra and Related Quantities, Nuclear Rocket Shielding, Nuclear Data for Shielding, Neutron Shielding, and Electron and Photon Shielding.* In addition, there will be a panel discussion on the subject of Shielding Education.

NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE

The Institute of Electrical and Electronics Engineers will sponsor a conference on Nuclear and Space Radiation Effects, July 8-11, 1969 at Pennsylvania State University, University Park, Pa. Further information can be obtained from the Conference Chairman, D. K. Wilson, Bell Telephone Laboratories, Whippany, New Jersey 07981.

NEW RSIC BIBLIOGRAPHY ON
REACTOR AND WEAPONS RADIATION SHIELDING
PUBLISHED

The document by D. K. Trubey and J. Gurney, "Bibliography, Subject Index, and Author Index of the Literature Examined by Radiation Shielding Information Center (Reactor and Weapons Radiation Shielding)", ORNL-RSIC-5 (Vol. II) (March 1969), has been issued. Most of the literature covered was issued in the years 1966-1968.

PERSONAL ITEMS

Mrs. Marie Anthony has recently joined the RSIC staff as an information specialist.

VISITORS TO RSIC

Visitors to RSIC during the month of April are: Charles Brient, Ohio University (temporarily with Neutron Physics Division, ORNL); Richard L. Currie, DuPont, Aiken, S. C.; Herbert Goldstein, Columbia University, New York, N.Y.; William E. Graves, DuPont, Aiken, S.C.; W. H. Hannum, USAEC, Washington, D.C.; R. K. Hill, Jr., Newport News Shipbuilding & Dry Dock Co., Newport News, Va.; William C. Hopkins, North Carolina State University, Raleigh, N. C.; Harvey Israel, Los Alamos Scientific Laboratory, Los Alamos, N. Mex.; Thomas Jaeger, Bundesanstalt für Material Prüfung, Berlin, Germany; C. M. Kim, Sargent & Lundy, Chicago, Ill.; Kermit Laughon, USAEC, Oak Ridge, Tenn.; Jere P. Nichols, Chemical Technology Division, ORNL; Jim Rash, Douglas-United Nuclear, Richland, Wash.; H. Frank Reed, Sargent & Lundy, Chicago, Ill.; J. A. G. Rosen, ENEA Computer Programme Library, Ispra, Italy; Melvin Scott, Sandia Corporation, Albuquerque, N. Mex.; Leonard Soffer, NASA Lewis Research Center, Cleveland, O.; Tan Watanabe, Hitachi, Ltd., Tokyo, Japan.

MAY ACCESSION LIST OF LITERATURE

The RSIC is now aware of the literature cited in the following list. This literature has either been obtained by RSIC or has been placed on order. When received, this material will be examined and assigned to various files if suitable for our information system. The accession list is divided into three fields (1) reactor and weapons shielding, (2) space and accelerator shielding, and (3) shielding computer codes. These titles are announced before processing and indexing so that there will be no delay and can serve as a prompt announcement of current literature.

RSIC is not a documentation center. Copies of the literature cited must generally be obtained from the author or from a documentation center such as the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

RSIC maintains a microfiche file of literature entered into its information system. Computer searches of this system (which produces a special bibliography) and duplicate microfiche copies of the literature in our file are available upon request. Naturally, we cannot supply copies of literature which is copyrighted (such as books or journal articles) or whose distribution is restricted. Neither service is yet available for the codes literature.

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