r.s.i.c. newsletter

OAK RIDGE NATIONAL LABORATORY

POST OFFICE BOX X • OAK RIDGE, TENNESSEE

OPERATED BY UNION CARBIDE CORPORATION

FOR THE U.S. ATOMIC ENERGY COMMISSION

No. 1 June 1, 1963

RSIC ANNOUNCES PROGRAM

The Radiation Shielding Information Center (RSIC) established at Oak Ridge National Laboratory in 1962 by the U.S. Atomic Energy Commission has completed its first shielding bibliography and set up a computer code section to collect and evaluate codes for shielding calculations. RSIC staff members S. K. Penny, D. K. Trubey, and Mrs. Betty F. Maskewitz will attend the June meeting of the American Nuclear Society in Salt Lake City, where they will discuss the program of the Center with other attendees. The publication of this newsletter prior to the meeting is primarily to acquaint the shielding community with the current activities of the Center.

Purpose of the Center

The purpose of RSIC is to collect, organize, evaluate, and disseminate radiation shielding information. Only reactor and other low-energy radiations (excluding weapons radiation) are currently being considered, but plans are that information on space and weapons radiation will be included in future years.

The type of information which the Center seeks falls into two classes:

1. published literature, including reports issued by various nuclear-oriented organizations,
2. digital computer codes.

The literature is examined, analyzed, and categorized in a sophisticated manner and then stored in an archival microfiche* file. The computer codes are examined with respect to operability, ease of dissemination, and whether they produce the desired results. The literature concerning the use of the codes is kept separate from the main body of literature because of the relatively short life of computer codes.

*Unitized microfilm sheets, 3 × 5 in.

Services of the Center

The services of RSIC are available to all organizations or individuals. The staff anticipates fulfilling requests for

- specific shielding information that can be supplied by telephone, by letter, or by conversation during a visit to the Center. (Appropriate security clearance will be necessary for access to the classified files.)
- bibliographies of shielding literature, either general or special in scope.
- information concerning digital computer codes which have been written for shielding computations and made operable at the Center.
- copies of the codes and other associated software.

In addition to specific requests, RSIC will

- publish a newsletter informing the shielding community of current research and development in the field of shielding and of the activities of the Center.
- publish bibliographies.
- issue critical reviews and state-of-the-art reports.
- issue compilations of generally useful shielding data.

(continued on page 4)

FIRST BIBLIOGRAPHY PUBLISHED

RSIC has generated its first bibliography by the information retrieval system developed by the Center. It consists of two major sections: a list of documents by subject category and an author index. The subject category list covers nine major subjects with a total of 118 categories. Two distinctive features of the bibliography are a qualitative evaluation of each literature specimen with respect to the category under which it has been entered and an indication, where appropriate, of whether the technique or device discussed in the specimen is described or merely used.

The number of literature specimens included is relatively small but large enough to demonstrate the utility of the bibliography. The literature included is mostly current or "classic" and only one journal (NUCLEAR SCIENCE AND ENGINEERING) is completely covered. The distribution of this bibliography has been limited to those persons who have specifically requested information from the Center.

COMPUTER CODE SECTION FORMED

An RSIC Computer Code Section has been formed to collect and evaluate computer codes useful for shielding calculations. IBM-7090 and CDC-1604-A machines are available for checking out codes written in a language suitable to these machines, such as FORTRAN. A goal of the section is to accumulate experience with all computer codes of interest and to intercompare them by means of standard, simple problems. The comparisons will be made on the basis of accuracy, machine time required, ease of operation and revision, ease of providing cross sections or other data in the required format, etc.

Thus far, the NIOBE and RENUPAK codes of United Nuclear Corporation and S_n codes of Los Alamos have been put into operation. In addition, several kernel and Monte Carlo codes have been obtained from General Dynamics/Fort Worth, and a number of other codes have been requested, including the SANE, SAGE, and ADONIS codes of United Nuclear Corporation; various codes, such as the FMC-N, FMC-G, and 18-0 codes, developed by GE-NMPO (formerly GE-ANPD); and others.

Inquiries concerning computer codes should be directed to Mrs. Betty Maskewitz, Oak Ridge National Laboratory, Post Office Box X, Oak Ridge, Tennessee.

INFORMATION RETRIEVAL SYSTEM DEVELOPED

An information retrieval system has been developed by RSIC for which the philosophy is the following:

- information contained in the shielding literature can be described adequately by subject categories in many-to-one correspondence with the literature specimen;
- each literature specimen must be examined thoroughly to determine the subject content since it is often not evident from the title – or from the abstract;
- the volume of literature in the field is small enough so that sophisticated indexing techniques may be used but large enough to warrant the use of a device such as a digital computer, as opposed to card handling or "peek-a-boo" techniques.

The retrieval system itself consists of several digital computer programs written for the IBM-7090 and several files on magnetic tape. Briefly, these files are indexed by the accession numbers of the literature specimens, by subject categories, and by the names of the authors. The files are continuously updated and revisions can be easily made. The types of revisions that can be handled are corrections of transcription errors, revision of the subject categories, and changes in the list of subject categories attached to a given literature specimen. It is possible to search this system for literature specimens described by Boolean expressions involving subject categories, authors, dates of publication, security classifications, etc. Only those specimens which satisfy the expressions would be printed out. A complete edit results in the type of bibliography which has been published.

SHIELDING NEWS REQUESTED

All persons interested in the Center are requested to inform the RSIC staff of pertinent shielding news. All such material should be mailed to: S. K. Penny, Radiation Shielding Information Center, Oak Ridge National Laboratory, Post Office Box X, Oak Ridge, Tennessee.

BOARD OF VOLUNTEER COORDINATORS ANNOUNCED

RSIC will keep in contact with the radiation shielding community through a board of volunteer coordinators representing organizations that have a significant interest in shielding. The coordinators will

- inform the Center of important shielding effort in their organizations.
- make the Center aware of relevant needs of the shielding community in the area of information transmission.
- apprise the Center of pertinent data or internal reports originating in their organizations.
- make suggestions on how the services of RSIC can be improved.

The following persons have volunteered to serve on the board:

D. G. Andrews, University of Toronto, Canada
L. A. Beach, U.S. Naval Research Laboratory, Washington
E. R. Beever, North American Aviation, Inc., Downey
H. F. Beeghly, Jones and Laughlin Steel Corporation, Graham Research Laboratory, Pittsburgh
Sheldon Berger, Atomics International, Canoga Park, California
George G. Biro, Gibbs and Hill, Inc., New York City
John G. Carver, General Electric Company, Pleasanton, California
Arthur B. Chilton, University of Illinois, Urbana
Michael D. Clark, United Power Company, London, England
Joseph DeFelice, Nuclear Technology Corporation, White Plains, New York
W. J. Dodson, Kaiser Center, Oakland 12, California
Hermann J. Donnert, U.S. Nuclear Defense Laboratory, Edgewood Arsenal, Maryland
William E. Edwards, General Electric Company, Cincinnati
H. M. Epstein, Battelle Memorial Institute, Columbus, Ohio
Robert E. Fortney, Northrop Space Laboratories, Hawthorne, California
Stanton T. Friedman, Allison Davison, GMC, Indianapolis, Indiana
Lt. D. C. C. Gibbs, Royal Naval College, Greenwich, London, England
Jess Greenborg, General Electric Company, Richland
J. W. Haffner, Armour Research Foundation, Chicago
Yoshiharu Higashihara, Kawasaki Dockyard Co., Ltd., Kobe, Japan
E. R. Hottenstein, Gilbert Associates, Inc., Reading, Pennsylvania
Charles M. Huddleston, U.S. Naval Civil Engineering Laboratory, Port Hueneme, California
Professor Tomonori Hyodo, Kyoto University, Yosida, Kyoto, Japan
G. D. Joanou, General Atomic, San Diego
A. L. Kaplan, General Electric Company, Syracuse, New York
W. R. Kimel, Kansas State University, Manhattan, Kansas
R. L. Kloster, McDonnell Aircraft Corporation, St. Louis, Missouri
William E. Kreger, U.S. Naval Radiological Defense Laboratory, San Francisco
Pierre LaFore, Centre d'Etudes Nucleaires de Fontenay-Aux-Roses, France
R. W. Langley, Douglas Aircraft Company, Inc., Santa Monica
J. C. LeDoux, Office of Civil Defense, Washington
Martin Leimdorfer, Research Institute of National Defense, Stockholm, Sweden
Phillip Mittelman, United Nuclear Corporation, White Plains, New York
W. D. Moak, Knapp Mills Inc., Wilmington, Delaware
Keith A. More, The Bendix Corporation, Ann Arbor, Michigan
Robert E. Mueller, Atomic Power Development Associates, Inc., Detroit
Nasaya Nakata, Ship Research Institute, Ministry of Transportation, Tokyo, Japan
Francis J. Patti, Burns and Roe, Inc., New York City
S. S. Pawlicki, Westinghouse Electric Corporation, Pittsburgh
W. E. Selph, Chance Vought Corporation, Dallas
K. Shure, Westinghouse Electric Corporation, Pittsburgh
Joseph H. Smith, Jet Propulsion Laboratory, Pasadena, California
J. R. Smolen, Pratt and Whitney Aircraft, Middletown, Connecticut
P. N. Stevens, University of Tennessee, Knoxville, Tennessee
Hans J. Tiller, U.S. Army Nuclear Defense Laboratory, Edgewood Arsenal, Maryland
F. E. Tillery, Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia
R. L. Tomlinson, Aerojet-General Nucleonics, San Ramon, California

(continued from page 1)

Staff and Coordinators

The two staff members who have initiated the program outlined above are S. K. Penny, Head, and D. K. Trubey. In recent months they have been joined by Mrs. Betty F. Maskewitz who is handling the Computer Section described elsewhere in this newsletter. In addition they are assisted, at least part time, by other ORNL staff members.

The RSIC staff will receive information and advice from a group of volunteer coordinators who are identified elsewhere.

Administration

RSIC is a part of the ORNL Neutron Physics Division, of which E. P. Blizard is director.

COORDINATOR MEETING SCHEDULED

A meeting of RSIC staff members with the coordinators of the Center is planned in conjunction with the American Nuclear Society meeting in Salt Lake City. The meeting is scheduled for 3:30 p.m., Tuesday, June 18, with the exact location to be announced in Salt Lake City.

NOTICE

This first newsletter has been mailed to many persons who have not requested that their names be included on the distribution list for information from the Center. In the future, the distribution will be restricted to requesters.