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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"Such things and deeds as are not written down are covered with darkness, and given over to the sepulchre of oblivion."....Ivan Bunin

RARE EARTHS IN SHIELDING MATERIAL?

There have been several cases of rare earths being added to shielding materials which has come to our attention recently. The rationale seems to be that rare earths will suppress the thermal neutron flux density. With the large cross sections available, this is surely the case, but this is of little merit if the capture gamma-rays are increased. The important question is generally, "Where do the neutrons go and what is the capture spectra?" There is no point, for example, in replacing a 2.2 MeV gamma-ray from hydrogen with the following gamma-rays from Gd: 1.2 of 1-2 MeV, 1.0 of 2-3 MeV, 0.2 of 3-5 MeV, and 0.3 of 5-7 MeV. If one replaces an iron capture, however, the source of 7.9 MeV gamma-rays might be reduced a factor of 100 although again the softer gamma-rays would be increased.

If someone has made a careful analysis and justified the adding of rare earths, we would like to know of it.

SPACE-ACCELERATOR SHIELDING BIBLIOGRAPHY REISSUED

The revised "Bibliography, Subject Index, and Author Index of the Literature Examined by the Radiation Shielding Information Center - Space and Accelerator Shielding", ORNL-RSIC-11(Rev.1) has recently been sent to those on the RSIC space - accelerator distribution list. It is available to others upon request.

HUNTSVILLE SEMINAR-WORKSHOP

A lecture series - workshop on codes related to nuclear rocket shielding was held on December 4-8, 1967, at the NASA Marshall Space Flight Center

Huntsville, Alabama. The code development work, and the seminar workshop, were done by personnel from the Westinghouse Astronuclear Laboratory, Pittsburgh, Pa. Mary Ann Capo, Richard Disney, Richard Saltesz, and Tom Jordan were on the teaching team. Henry Stern of NASA/MSFC coordinated the seminar-workshop.

Under the title of "Synthesis of Calculational Methods for the Design and Analysis of Radiation Shields for Nuclear Rocket Systems," 9 volumes (WANL-PR (LL)-010) were written describing the computer codes: POINT, TAPAT, KAP-V, TIC-TOC-TOE, ODD-K, NAGS, DAFT, and FASTER. A sample problem and input and output for each of the codes are described in WANL-PR(LL)-014, Volumes I-IX. Several calculational methods are considered in the code development: point kernel integration, diffusion theory, discrete ordinates, and monte carlo techniques. Thirty-four people from 13 different installations attended. Juanita Brown and Betty F. Maskewitz participated in the seminar-workshop and are currently in the process of checking out at ORNL and packaging the codes. An announcement of availability will be made in the near future.

PERSONAL ITEMS

When we know of personal items of interest to the shielding community, we would like to mention them here. As a start, we would like to report that Martin Leimdorfer has recently opened an European subsidiary of MAGI in Stockholm called Industri-Matematik AB(IM). Arne Bergstrom has taken Martin's position at the Research Institute of the Swedish National Defense.

We also would like to mention that Keith Penny has returned to the Neutron Physics Division at ORNL.

Francis Clark has recently left RSIC to join the Instrumentation and Controls Division of ORNL.

HAPPY NEW YEAR !

We of the RSIC staff want to wish our readers a pleasant and rewarding New Year. We have enjoyed a profitable year of information exchange and request our readers to continue this fine cooperation by sending their shielding information to us.

Starting off the new year, we have the first newsletter typed by our new secretary, Miss Patti Callaghan. The RSIC staff is grateful to Mrs. Jewell Ellis who got out each newsletter without fail for three years and who now is in the Analytical Chemistry Division of ORNL.

DECEMBER 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 of (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 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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KAP-V
FASTER
TIC-TOE-TOE

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