# RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

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

POST OFFICE BOX X •
OAK RIDGE, TENNESSEE 37831

No. 52 March, 1969

*Man often acquires just so much knowledge as to discover his ignorance, and attains as much experience as to see and regret his follies, and then dies. --- Clulow*

## GAMMA-RAY SPECTRA ARISING FROM THERMAL-NEUTRON CAPTURE[1]

It is well known that the generally available thermal neutron capture gamma-ray spectra data are not very satisfactory for shielding calculations. To alleviate this situation, a program was undertaken at ORNL to make spectral measurements of gamma-rays emanating from slabs of various materials exposed to a beam of neutrons from the TSR-II reactor. A carefully calibrated sodium iodide crystal was used in a good geometry experiment to determine the absolute yield of gamma rays as a function of gamma-ray energy. An evaluation of the thermal neutron capture gamma-ray spectra has been completed for 8 elements with an accuracy that is dependent primarily on errors in the thermal neutron capture cross section only. The accuracy of these determinations is indicated by the fact that the measured binding energies obtained on an absolute basis are in agreement with calculated values within ± 5% on the average.

Slabs of the material in either thin sheet metal or powdered

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[1] From R. E. Maerker and F. J. Muckenthaler, "Gamma-Ray Spectra Arising from Thermal-Neutron Capture in Iron, Aluminum, and Copper", Trans. Am. Nucl. Soc. 11, 701 (1968) and their paper to be published in Vol. 12. We are grateful to them for making their data available prior to publication. The values in Table I should differ but minutely from the final results to be published in ORNL-4382.

carbonate or oxide form of the order of 1-in. thick and 5-ft. square were placed in a collimated neutron beam and the response of a collimated 5-in. x 5-in. NaI (Tl) detector was measured at a point 20 feet from each slab. The slabs when in powdered form were supported by a 1/16-in.-thick aluminum container whose contribution to the total response was allowed for. The unfolding of the spectra was accomplished with the aid of a series of absolute response functions experimentally determined in the same geometry from a number of monoenergetic gamma-ray sources of known intensity in the energy range 1-11 MeV. An interpolation scheme was devised from the calibration data to obtain the experimental response of the crystal to any source energy in the range 1-11 MeV with an estimated accuracy of ± 15%.

The uniqueness of this work lies in the high accuracy to which the crystal responses are known for any source energy in the range 1-11 MeV, the Monte Carlo calculation of the total number of captures occurring in the slabs starting with the measured thermal-neutron current incident on the slabs (taking into account the presence of any water or other impurities in the slabs, as well as multiple scattering effects), and the ability to include any continuum contribution to the gamma-ray spectra as well as the discrete contribution.

Table I presents the results for iron, aluminum, copper, silicon, calcium, potassium, sodium, and barium, elements commonly found in concrete. The barium results are particularly interesting for they include a continuum contribution approximately as big as the discrete contribution.

Table 1. Gamma-Ray Spectra From Thermal-Neutron Capture

(see pages 3 and 4)

## REPORT NUMBER CODES LISTED

At the suggestion of Dr. William Kreger, U. S. Naval Radiological Defense Laboratory, we are listing elsewhere in this issue the report number codes with originating institutions of all the reports in the RSIC files. This list should be a help if you wish to order a copy of any report listed in our accession list from the originating institution. Most of these reports in our accession lists will ultimately be available from the Clearinghouse (CFSTI) but in some cases they can be obtained only from the originator. The list is composed of selected codes taken from Nuclear Science Abstracts Cumulative Report Number Index, Vol. 16-21. Some of the institutions or department names are out of date since many of the report codes were established many years ago. We have not attempted to revise the addresses.

TABLE 1. GAMMA-RAY SPECTRA FROM THERMAL-NEUTRON CAPTURE

| | Silicon | Calcium | Potassium | Sodium | Barium | Iron | Aluminum | Copper |
|---|---|---|---|---|---|---|---|---|
| $\sigma_a$(.0253 eV) (barns) | 0.16 | 0.44 | 2.07 | 0.534 | 1.2 | 2.53 | 0.235 | 3.8 |
| ΔE(MeV) | Photons/100 Captures | | | | | | | |
| 1-1.5 | 15.3 | 20.9* | 34.9 | 15.5 | 63.4 | 5.0 | 18.6 | 18.2 |
| 1.5-2 | 0 | 79.6 | 31.4 | 11.9 | 34.6 | 15.0 | 10.4[a] | 11.6 |
| 2-2.5 | 20.8 | 41.5 | 31.2 | 26.9 | 34.3 | 3.9 | 10.6 | 6.9 |
| 2.5-3 | 4.6 | 14.3 | 23.5 | 48.3 | 24.3 | 6.0 | 20.5 | 8.9 |
| 3-3.5 | 5.5 | 7.9 | 16.6 | 14.2 | 17.6 | 9.2 | 15.9 | 8.8 |
| 3.5-4 | 76.7 | 13.5 | 23.1 | 34.0 | 16.0 | 3.5 | 14.3 | 8.0 |
| 4-4.5 | 0.8 | 19.4 | 20.2 | 6.4 | 28.1 | 7.2 | 16.1 | 10.5 |
| 4.5-5 | 70.3 | 6.6 | 7.7 | 2.7 | 12.6 | 3.3 | 17.6 | 4.4 |
| 5-5.5 | 6.7 | 2.5 | 16.0 | 2.2 | 7.6 | 1.0 | 6.8 | 8.9 |
| 5.5-6 | 0.4 | 12.1 | 17.2 | 5.9 | 9.5 | 9.9 | 2.8 | 2.1 |
| 6-6.5 | 12.3 | 40.0 | 0.95 | 21.5 | 4.0 | 10.1 | 6.0 | 5.0 |
| 6.5-7 | 0.75 | 0 | 2.1 | 0 | 1.0 | 0.5 | 2.2 | 9.6 |
| 7-7.5 | 9.7 | 0 | 0.45 | 0 | 0.85 | 5.5 | 0.7 | 14.7 |
| 7.5-8 | 0 | 0 | 5.7 | 0 | 1.2 | 50.6 | 32.4 | 41.6 |

TABLE 1 (Cont'd)

| | Silicon | Calcium | Potassium | Sodium | Barium | Iron | Aluminum | Copper |
|---|---|---|---|---|---|---|---|---|
| $\sigma_a$(.0253 eV) (barns) | 0.16 | 0.44 | 2.07 | 0.534 | 1.2 | 2.53 | 0.235 | 3.8 |
| ΔE(MeV) | | | Photons/100 Captures | | | | | |
| 8-8.5 | 2.15 | 0 | 0 | 0 | 0.3 | 0.3 | 0 | 0 |
| 8.5-9 | 0 | 0 | 0 | 0 | 0.2 | 0.5 | 0 | 0 |
| 9-9.5 | 0 | 0 | 0 | 0 | 0.45 | 3.3 | 0 | 0 |
| $\%\overline{BE}$ # | 105 | 102 | 100 | 102 | 97 | 98 | 97 | 105 |
| Best Previous $\%\overline{BE}$ | 111 | 94 | 75 | 97 | 48 | 93 | 70 | 92 |

$\overline{BE}$ = total amount of energy available to the photon from capture in the naturally occuring element.

*1.15 - 1.5 MeV

#Includes small contribution below 1 MeV to binding energy previously determined by others.

aDoes not include the ~100 1.78-MeV gamma rays following β-decay of 28-al.

## CONFERENCE ON COMPUTER USE IN KNOXVILLE APRIL 21-23

A conference on "The Effective Use of Computers in the Nuclear Industry" sponsored by the Mathematics and Computation Division of the American Nuclear Society, Oak Ridge National Laboratory and the University of Tennessee, will be held in Knoxville, April 21-23, 1969. Session titles are: Reactor Kinetics, Data Processing, Multigroup Calculations, Reactor Design Systems, Hybrid Computations, Computational Techniques, Engineering Analysis, and Monte Carlo.

There will be round-table discussions and special speakers include W. H. Hannum and M. H. Schwarts of the USAEC and A. M. Weinberg, ORNL Director.

RSIC staff member, Betty F. Maskewitz is General Chairman.

## NUCLEAR NEWS PUBLISHES SPECIAL SHIELDING SYMPOSIUM

The February Nuclear News [Nucl. News 12(2), 36-59] has a series of articles on the present state of shielding by J. R. Beyster, K. J. Yost, H. E. Hungerford, R. G. Alsmiller,Jr., F. S. Alsmiller, A. B. Chilton, C. E. Clifford, F. R. Mynatt, E. A. Straker, and N. F. Barr.

This issue also has a Buyers Guide Supplement which has several categories of interest to shielders which include shielding materials, windows (radiation shielding), radiation shielding, services, and others.

## CORRECTIONS TO OGRE LIBRARY NO. 2

The DLC-4/OGRE Photon Interaction Cross-Section Library No. 2, announced in RSIC Newsletter No. 47 (October 1968), has been revised. The first version represented the photoelectric cross section as a multivalued function at the absorption edges. This can give trouble to interpolation routines so the new version gives data at the edges for two slightly separated energies. Slight defects in the data for Mo( z=42) and Pd ( z=46) have also been corrected. The revised data is available on request from RSIC.

## DLC-2 CORRECTIONS

An error has been found in the sodium-23 (material number 1059) neutron 99-group cross sections due to an error in SUPERTOG. The absorption and total cross sections are incorrect for groups 52-94 (1.445 eV - 67.38 keV). The SUPERTOG code will be corrected and sodium will be re-run in the near future.

## SPACE-ACCELERATOR SDI

For those on the space-accelerator shielding distribution, we are including information concerning the selective-dissemination-of-information (SDI) service. Be sure to note that a new interest profile will be required of all participants since many of the old profiles are now out of date. If the SDI information was not included in your newsletter, and you would like to see it, please write.

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## NOTICE TO CODE REQUESTERS!!

Please inspect all reels of tapes being shipped to RSIC with a code request. We receive tapes which are obviously in very bad condition and we must take time to check them ourselves and sometimes to strip off bad portions before writing a request on them. It would save time and trouble if the reels that are sent are inspected before mailing. It is also wise to send a full 2400 ft. reel of tape and please verify that your identification is on your reel of tape.

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## VISITORS TO RSIC

Visitors to RSIC during the month of February are: H. V. Kaufman, Sun Chemical Corp., New York, New York; N. B. Gove, Mathematics Div., ORNL; Leif Hjärne, IAEA, Vienna, Austria; Harold W. Osgood, Bechtel Corp., Gaithersburg, Maryland; Vic Bell, Director CCDN, Saclay, France; A. Schett, CCDN, Saclay, France; Dale McGarry, Harry Diamond Lab., Washington, D. C.

## MARCH 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.

### REACTOR AND WEAPONS SHIELDING

*AERE-M-2065 (Amend).*

Evaluation of the Pu-239 Fission Cross-Section in the Energy Range 1 keV to 100 keV
G. D. James, B. H. Patrick
October 1968

*CEA-CONF-1091 (CONF-681008-2) (In French)*

New Types of Concrete Resistent to High Temperature for the Protection of Nuclear Reactors
F. Dubois, P. Mauny, J. Rapeneau

*CEA-N-919 (In French)*

Activite Des Produits de Fission Thermique U-235, Pu-239, Pu-241
R. Tourreil
April, 1968

GA-8854

A Set of Evaluated Nuclear Data for Uranium-233
G. L. Boroughs, C. W. Craven, Jr., et al.
August 27, 1968

HASL-205

Experimental and Theoretical Studies of the Transport of Gamma-Rays Through Slab Shields
B. G. Bennett, G. Burke, H. L. Beck
January 1969

NDL-TR-116 (AD-680949)

Fast Neutron Spectrum and Dose Rate in Water and in Aluminum-Water Laminations
G. I. Coulbourn, T. G. Williamson
November 1968

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, K. D. Franz
December 18, 1968

ORNL-TM-2454

Applications of Adjoint Flux Calculations to Monte Carlo Biasing
F. A. R. Schmidt, E. A. Straker, V. R. Cain
December 26, 1968

ORNL-TR1809 (Energ. Nucl. 9, 266-8) (Paris) (1967)

The Shipping of Radioactive Materials and Safety
Y. Sousselier

ORNL-TR-1818 (Kernenergie, 11 (7), 197-103 (July, 1968) (In German)

Gamma-Radiation Shielding with Ordinary Concrete
F. W. Krüger

ORNL-TR-1848 (CEA-R-3196)

Propagation of Thermal Neutrons in Mock-Up Helical Steel Inserts in a Water Shield
C. Devillers, J. Lanore
April 1967

*ORNL-TR-1983 (Z. Angew. Phys., 22, 145-9) (1967)*

On the Optimization of Small-Angle Scattering Experiments with Split Geometry
F. Hossfeld, G. Maier
1967

*ORNL-TR-2033 (Translated from Inzenyrske Stavby, 3, 117-130) (1968) (In Czech.)*

Attenuation Factors for Broad Beam Gamma-Radiation in Lead, Steel, Concrete and Water
A. Hönig

*ORNL-TR-2036 (Kernenergie, 11, 3-10) (January 1968) (In German)*

A Study of the Albedo Problem for the Neutron Transport in a Plate
H. Kiesewetter, R. Kruse

*RT/FI (68) 30 (N68-37771)*

Heterogeneous Methods in Neutron Transport Theory
V. C. Boffi, V. G. Molinari
June 1968

*SC-RR-68-659*

Comparison of Selected Experimental and Theoretical Photon Transport Results
J. H. Renken
October 1968

*USNRDL-TRC-68-28*

Gamma Ray Attenuation Through Non-Uniform Concrete Slabs
R. Spring
April 1968

*USNRDL-TR-68-95*

Analysis of Some Experiments on Fallout Shielding by Above-Ground Structures
J. M. Ferguson
June 17, 1968

*Am. J. Roentgenol., 102, 673-676 (March, 1968)*

The M. D. Anderson Method for Computation of Isodose Curves Around Interstitial and Intracavitary Radiation Sources. II. Mathematical and Computational Aspects
G. W. Batten, Jr.

*Energ. Nucl. (Madrid), 12, 157-72 (Mar-April 1968) (In Spanish)*

International Conference on the Physical Problems of Reactor Shielding
A. Carbo

*Energ. Nucl. (Milan), 15, 697-701 (Nov. 1968) (In Italian)*

EURACOS: An Irradiation Facility with a High Fast Neutron Flux
G. Perlini

*Izmer. Tekh, 7, 52-5(July 1968) (In Russian)*

Investigation of the Alignment of the Fast Neutron Current from Collimators
V. I. Fominykh, M. F. Yudin, A. P. Yanovskii

*J. Nucl. Sci. Technol. (Tokyo), 5 (11), 559-(1968)*

Gamma-Ray Streaming Through Multibend Cylindrical Ducts
A. Ohgushi, M. Kitazume

*Nucl. Appl., 5(5), 334-43 (Nov. 1968) (Condensed version of RRA-T-81) (AD-671902)*

The Effects of Ground Roughness on Fallout Protection Factors
R. L. French, J. H. Price

*Nucl. Appl., 6(1), 63-67 (January 1969)(LA-DC-9802)*

Fast-Neutron Biological Dose Attenuation by Lead and Polyethylene Shields
D. J. Dudziak

*Nucl. Appl., 6(1), 81-92 (January 1969)*

Gamma and Neutron Distribution in a Tungsten Water-Moderated Critical Assembly
G. Houghton, C. Jupiter, G. Trimble, D. Spielberg, P. G. Klann, W. A. Paulson

*Nucl. Appl., 6(2), 168-175 (February 1969) (ORNL-TM-2299)*

Fast-Neutron Collimator Studies. The TSF-SNAP Core Mapping Collimator
E. A. Straker

*Nucl. Eng. Design, 5, 514-515 (1967)*

Discussion on: "Shielding Properties of the $UPb_3$ Inter-Metallic Compound" by James S. Moser and Alfred F. Rohach
R. Smith

*Nucl. Safety, 9(6), 457-466 (Nov.-Dec. 1968)*

The Shielding Problem with Low-Energy Particle Accelerators
E. Alfred Burrill

*Nucl. Sci. Eng., 35(2) 227-239 (February 1969)*

Time Spectra from Spheres Pulsed with 14-MeV Neutrons
L. F. Hansen, J. D. Anderson, E. Goldberg, E. F. Plechaty, M. L. Stelts, C. Wong

*Nucl. Sci. Eng., 35(2), 283-285 (February 1969)*

Modeling Relationships for Radiation Transport within Ducts and other Cavities in Shields
J. Diaz, A. B. Chilton

*Semento Konkurito, 252, 28-36 (February 1968) (In Japanese)*

Quality Control of Concrete by a Neutron Moisture Meter
H. Kaga, M. Yamamoto

*Stud. Cercet. Fiz., 17, 941-9 (1965) (In Russian)*

The Kinetic $S_n$ Approximation of Neutron Transport
M. Pavelescu

*Zh. Vychisl. Mat. i Mat. Fiz., 8, 1001-12 (Sept.-Oct. 1968) (In Russian)*

Use of Symmetry and other Features of Neutron Trajectories in order to Expedite Monte Carlo Calculations
I. G. Dyad'kin, V. N. Starikov

*Zh. Vychisl. Mat. i Mat. Fiz., 8, 1085-94 (Sept-Oct. 1968) (In Russian)*

On One of the Principles for Optimization of Calculations by the Monte Carlo Method
G. A. Mikhailov

*BOOK (In Russian)*

Passage of Radiation Through Inhomogeneities in Shields
V. G. Zolotukhin, V. A. Klimanov, O. I. Leipunskii, V. K. Saharov, B. I. Sinitsyn, S. G. Tsypin
Published by Atomizdat, Moscow (1968)

*THESIS*

Diffusion of Fast Neutrons Through Cylindrical Ducts in a Shield
Ricardo Artigas
Purdue University, Lafayette, Indiana
1968

*THESIS*

Invariant-Imbedding Theory of Photon Transport
R. E. Kaiser
Kansas State University, Manhattan, Kansas
1968

*THESIS*

An Analysis of the Effects of Cross Section Uncertainties on the Multitable $S_n$ Solution of Neutron Transport through Air
David Leon Prezbindowski
Purdue University, Lafayette, Ind.
1968

*THESIS*

Fast Neutron Steaming Through Concrete Ducts
Yo Talk Song
University of Illinois, Urbana, Illinois
1968

## *SPACE AND ACCELERATOR SHIELDING*

*A69-12934 (A69-12928 p. 194-234)*

Energetic Solar Particles
C. E. Fichtel
1967
IN: International Conference on Cosmic Rays, 10
Calgary, Canada, June 19-30, 1967, Proceedings. Part A
Edited by Prescott, J. R., et al.

*AFWL-TR-68-80*

Dose and Depth Dose Measurements on the Sixth Gemini Flight, A Comparison with the Germini-4 Radiation Measurements
Marion F. Schneider (Capt., USAF)
September 1968

*JINR-P1-4077 (In Russian)*

Experimental Investigation of the Development of Electron-Photon Showers at an Energy from 1 to 2 GeV
Z. Ogrzeval'skii, Z. S. Strugal'skii
1968

*MORP-68-12*

Particle Accelerator Safety Manual
W. M. Brobeck
October 1968

*NASA-CR-97467 (N69-10265)*

The Energy Spectra of Electrons from Pion-Muon-Electron Decays in Interstellar Space
J. H. Scanlon, (Ph. D. Thesis)
1964

*NASA-CR-97611 (n-69-10668)*

Electrons and Protons in Long-Lived Steams of Energetic Solar Particles
K. A. Anderson
June 1968

*NASA-CR-97807 (JPL-TR-32-1303, N69-11372)*

Solar Proton Forecast System and Procedures Used During the Mariner 5 Mission
C. C. Gonzalez, E. L. Divita
October 1, 1968

*ORNL-TR-1897 (LNL-66/14 in Italian)*

Calculation of the Shielding Around the Targets of the Frascati Linear Accelerator
M. Pelliccioni
March 8, 1966

*ORNL-TR-2073 (JINR-P2-4068 in Russian)*

Interaction Cross Sections of Fast Particles and Atomic Nuclei
V. S. Barashenkov, K. K. Gudima, V. D. Toneev
1968

*UCRL-18424 (Conf. 690103-1)*

Evaluation of Fluxes and Dose-Equivalent Rates in Neutron Fields Around High Energy Accelerators
A. Rindi
August 1968

*CONF-690103-1 (UCRL-18424)*

From Health Physics Society Midyear Topical Symposium, Los Angeles, California

*Atomic Energy Rev.*, 6(4), 3-79 (1968)

Characteristics of the Interaction of High-Energy Nucleons with Nuclei
V. A. Konshin, E. S. Matuesvich
Vienna, 1968

*Bull. Acad. Sci. USSR, Phys. Ser. (English Transl.)*, 31(9), 1583-85 (1967) (*Izv. Akad. Nauk SSSR, Ser. Fis.* 31, 1545-47 (1967) (*In Russian*)

Equilibrium Angular Distribution Functions for Cascade Electrons in Iron and Lead
I. P. Ivanenko, B. E. Samosudov

*Nucl Safety*, 9(6), 457-466 (Nov.-Dec. 1968)

The Shielding Problem with Low Energy Particle Accelerators
E. Alfred Burrill

*Proc. Acad. Sci. USSR (Phys. Sect.)* 3, 962-66(1958) (*Dokl. Akad. Nauk SSSR*, 122, 367-70(1958) (*In Russian*)

On the Equilibrium Angular Distribution Function of Particles in a Cascade Shower
I. P. Ivanenko

*Soviet J. Nucl. Phys. (English Transl.)*, 4(4) 574-77 (April 1967) (*J. Nucl. Phys.* , USSR, 4, 807-811) (October 1966) (*In Russian*)

Electron and Photon Equilibrium Spectra with Polarization of the Medium and Multiple Scattering Taken into Account
I. P. Ivanenko, B. E. Samosudov

*Soviet Phys. JETP (English Transl.)*, 5(2), 204-8 (September 1957) (*J. Exptl. Theoret. Phys.*)(USSR), 32, 333-337 (Feb. 1957)

Equilibrium Spectrum of Electrons and Photons with Account of Scattering
I. P. Ivanenko

*Soviet Phys. JETP (English Transl.)*, 6, 637-39 (1958) (*J. Exptl. Theoret. Phys.*) USSR, 33, 825-827, (September 1957) (*In Russian*)

Particle Angular Distribution Function at the Cascade Shower Maximum
I. P. Ivanenko

# *REPORT NUMBER CODES USED BY THE RADIATION SHIELDING INFORMATION CENTER IN CATALOGING REPORTS*

This list includes report codes that have been used by the Radiation Shielding Information Center in identifying and cataloging reports. The report codes are listed alphabetically and are identified in each case with the appropriate corporate author or agency which has used the code.

## A

*A-*
National Defense Research Committee

*AAEC/E-*
Australia. Atomic Energy Commission Research Establishment, Lucas Heights, New South Wales

*AAEC/TM-*
Australia. Atomic Energy Commission Research Establishment, Lucas Heights, New South Wales

*ABS-THH-*
Technische Hochschule, Hanover (West Germany)

*ACF-*
ACF Industries, Inc., Albuquerque, New Mexico

*ACNP-*
Allis-Chalmers Mfg. Co. Atomic Energy Div., Milwaukee

*A/CONF.15/P(no.)-*
United Nations. International Conference on the Peaceful Uses of Atomic Energy, 1968

*A/CONF.28/P/(no.)-*
United Nations. International Conference on the Peaceful Uses of Atomic Energy, 1965

*AD-*
Defense Documentation Center, Arlington, Virginia

*AE-*
Aktiebolaget Atomenergi, Stockholm

*AEC-*
Atomic Energy Commission, Washington, D. C.

*AEC-tr-*
Division of Technical Information Extension, AEC

*AECD-(continuation of MDDC-)*
Division of Technical Information Extension, AEC

*AECD-HP-*
Atomic Energy Centre, Dacca (Pakistan)

*AECD/EP-*
Atomic Energy Centre, Dacca (Pakistan). Experimental Physics Div.

*AECL-*
Atomic Energy of Canada Ltd., Chalk River, Ontario

*AECU-*
Division of Technical Information Extension, AEC

*AED-C-*
Gmelin-Institut fur Anorganische Chemie und Grenzgebiete, Frankfurt am Main

*AEET/(letter)/(no.)-*
India. Atomic Energy Establishment, Trombay

*AEEW-*
United Kingdom Atomic Energy Authority. Research Group. Atomic Energy Establishment, Winfrith, Dorset, England

*AEEW-R-*
United Kingdom Atomic Energy Authority. Research Group. Atomic Energy Establishment, Winfrith, Dorset, England

*AEG-E-*
Allgemeine Elektricitaets-Gesellschaft, Frankfurt am Main (West Germany)

AERE-
Great Britain. Atomic Energy Research Establishment, Harwell, Berks, England

AERE-M-
Great Britain. Atomic Energy Research Establishment, Harwell, Berks, England

AERL-
Avco Corp. Avco-Everett Research Lab., Everett, Mass.

AFBSD-TN-
Avco Corp. Avco-Everett Research Lab., Everett, Mass.

AFCRL-
Air Force Cambridge Research Labs., Bedford, Mass.

AFRRI-CR-
Armed Forces Radiobiology Research Inst., Bethesda, Maryland

AFRRI-SP-
Armed Forces Radiobiology Research Inst., Bethesda, Maryland

AFRRI-SR-
Armed Forces Radiobiology Research Inst., Bethesda, Maryland

AFRRI-TN-
Armed Forces Radiobiology Research Inst., Bethesda, Maryland

AFSWP-
Armed Forces Special Weapons Project, Washington, D. C.

AFWL-TDR-
Air Force Weapons Laboratory, Kirtland AFB, New Mexico

AGN-
Aerojet-General Nucleonics, San Ramon, California

AHSB(RP)M-
United Kingdom Atomic Energy Authority. Authority Health and Safety Branch. Radiological Protection Div., Harwell, Berks, England

AHSB(RP)R-
United Kingdom Atomic Energy Authority. Authority Health and Safety Branch. Radiological Protection Div., Harwell, Berks, England

AHSB(S)R-
United Kingdom Atomic Energy Authority. Authority Health and Safety Branch, Risley, Lancs, England

AI-
Atomics International Div., North American Aviation, Inc., Canoga Park, California

AMP-
Avco Corp. Avco-Everett Research Lab., Everett, Mass.

AMRL-TDR-(yr)-(no)-
Aerospace Medical Div. 6570th Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio

AMRL-TR-
Admiral Corp., Chicago, Illinois

AN-
Aerojet-General Nucleonics, San Ramon, California

AN-AGCR-
Aerojet-General Nucleonics, San Ramon, California

ANL-
Argonne National Laboratory, Hinsdale, Illinois

ANS-SD-
American Nuclear Society

ANU-P-
Australian National Univ. Research School of Physical Sciences, Camberra

APAE-
Alco Products, Inc., New York

APDA-
Atomic Power Development Associates, Inc., Detroit

*APED-*
General Electric Co., Atomic Power Equipment Dept., San Jose, California

*APEX-*
General Electric Co., Aircraft Nuclear Propulsion Dept., Cincinnati

*ARF-(See IITRI-(no)-(no.))*
Illinois Institute of Tech., Chicago. Armour Research Foundation

*ARH-*
Atlantic Richfield Hanford Co., Richland, Washington

*ARL-*
Chicago. University

*ARL Tech. Rpt.-*
United Nuclear Corp., White Plains, New York

*ARV-*
Italy. Comitato Nazionale per l'Energia Nucleare. Bologna

*ASAE-*
American-Standard. Atomic Energy Div., Mountain View, California

*ASAE-*
American-Standard. Atomic Energy Div., Redwood City, California

*ASD-TDR-*
Aeronautical Systems Div., Wright-Patterson AFB, Ohio

*ATL-A-*
Advanced Technology Labs. Div. of American-Standard, Mountain View, California

*AWRE-*
Great Britain. Atomic Weapons Research Establishment, Aldermaston, Berks, England

## B

*BAW-*
Babcock and Wilcos Co. Atomic Energy Div., Lynchburg, Virginia

BLG-
Brussels. Centre d'Etude de l'Energie Nucleaire

BM-IC. (see also IC.)
Bureau of Mines

BMI-
Battelle Memorial Inst., Columbus, Ohio

BMwF-FBK-
Battelle Institut E. V., Frankfurt am Main (West Germany)

BNL-
Brookhaven National Laboratory, Upton, New York

BNWL-
Battelle-Northwest, Richland, Washington

BRL-
Ballistic Research Labs., Aberdeen Proving Ground, Maryland

## C

CANEL-
Pratt and Whitney Aircraft, Middletown, Conn.

CCDN-
ENEA Neutron Data Compilation Centre, Gif-sur-Yvette (France)

CDRP-
California Univ., Berkeley. Inst. of Engineering Research

CEA-
Cambridge Electron Accelerator, Mass

CEA-Bib-
France. Commissariat a l'Energie Atomique. Centre d'Etudes Nucleaires, Saclay

CEA-N-
France. Commissariat a l'Energie Atomique. Centre d'Etudes Nucleaires, Fontenay-Aux-Roses

CEA-R-
France. Commissariat a l'Energie Atomique. Centre d'Etudes Nucleaires, Saclay

CEAL-
Cambridge Electron Accelerator, Mass.

CEN-R-
France. Commissariat a l'Energie Atomique, Paris

CEND-
Combustion Engineering, Inc. Nuclear Div., Idaho Falls, Idaho

CENRD-
Combustion Engineering, Inc. Naval Reactors Div., Windsor, Conn.

CERN-
European Council for Nuclear Research, Geneva

CEX-
Division of Biology and Medicine. Civil Effects Test Operations, AEC

CLOR-
Polish Academy of Sciences. Inst. of Nuclear Research, Warsaw

CONF-
Division of Technical Information Extension, AEC (assigned to all conferences) Oak Ridge, Tennessee

COO-
Chicago Operations Office, AEC, Argonne, Illinois

CRC-
National Research Council of Canada. Atomic Energy Project, Chalk River, Ontario

CRDC-
National Research Council of Canada. Atomic Energy Project, Chalk River, Ontario

CRGP-
National Research Council of Canada. Atomic Energy Project, Chalk River, Ontario

CRRD-
Atomic Energy of Canada Ltd., Chalk River, Ontario

CRRP-
National Research Council of Canada. Atomic Energy Project, Chalk River, Ontario

CVAC-
Consolidated Vultee Aircraft Corp., Fort Worth, Texas

CVNA-
Carolinas-Virginia Nuclear Power Associates, Inc.

## D

D-
Boeing Airplane Co., Seattle, Washington

DAC-
Douglas Aircraft Co., Inc., Santa Monica, California, Missile and Space Systems Div.

DASA-
Defense Atomic Support Agency, Washington, D. C.

DC-(yr)-(mo)-
General Electric Co. Aircraft Nuclear Propulsion Project, Cincinnati, Ohio

DCI-
Atomic Energy of Canada Ltd. Chalk River Project, Chalk River, Ontario

DEG-
United Kingdom Atomic Energy Authority. Development and Engineering Group, Risley, Lancs, England

DEP/SEPP-
Centre d'Etudes Nucleaires, Fontenay-Aux-Roses, France

DESY-
Deutsches Elektronen-Synchrotron, Hamburg

DF-
Canadian General Electric Co. Ltd., Peterborough (Ontario). Civilian Atomic Power Dept.

DI/HP-
European Organization for Nuclear Research, Geneva

DL-
Atomic Energy of Canada Ltd. Chalk River Project, Chalk River, Ontario

DLCS-
Duquesne Light Co., Shippingport, Penna.

DNPL-
Daresbury Nuclear Physics Lab. (England)

DOCKET-
Division of Reactor Licensing, Washington, D. C.

DOFL-TR-
Harry Diamond Labs., Washington, D. C.

DP-
Du Pont de Nemours (E. I.) & Co., Wilmington, Delaware; and Savannah River Lab., Aiken, South Carolina

DRCL-
Canada. Defence Research Chemical Labs., Ottawa

DTMB-(*see also* TMB-)-
David Taylor Model Basin, Cardercok, Maryland

DUN-
Douglas United Nuclear, Inc., Richland, Washington

*DV-TR-*
Army Ballistics Missile Agency, Redstone Arsenal, Maryland

*EACRP-*
European-American Committee on Reactor Physics, ENEA in Paris

*EAD-*
Aerojet-General Nucleonics, San Ramon, California

*EANDC-*
European-American Nuclear Data Committee

*EDR-*
Allison Div., General Motors Corp., Indianapolis, Indiana

*EGG-*
Edgerton, Germeshausen, and Grier, Inc., Boston, Mass.

*EIR-*
Switzerland. Eidgenossisches Institut fur Reaktorforschung, Wurenlingen

*ESD-TDR-(yr)-(no)-*
Electronic Systems Div., Air Force Systems Command, Bedford, Mass.

*ESRO-SP-*
European Space Research Lab., Noordwijk (Netherlands)

*EUR-*
European Atomic Energy Community

*EURAEC-*
United States-Euratom Joint Research and Development Program

*EURFNR-*
United States-Euratom Fast Reactor Exchange Program

*FA-M-*
Dept. of the Army, Frankfort Arsenal. Pitman-Dunn. Labs., Phila.

FEI-
Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii SSSR, Obninsk. Fiziko-Energeticheskii Institut

FFIF-F-
Norway. Forsvarets Forskningsinstitutt, Kjeller

FOA-
Forsvarets Forskningsanstalt, Stockholm (Sweden)

FTD-MT-
Foreign Technology, Div., Wright-Patterson AFB, Ohio

FZK-
General Dynamics/Fort Worth, Texas

## G

GA-
General Atomic Div., General Dynamics Corp., San Diego, Calif.

GACD-
General Atomic Div. General Dynamics Corp., San Diego, Calif.

GAMD-
General Atomic Div., General Dynamics Corp., San Diego, Calif.

GE-ANP-
General Electric Co. Aircraft Nuclear Propulsion Dept., Cincinnati, Ohio

GE-TM-
General Electric Co., Schenectady, New York, Cincinnati, Ohio

GEAP-
General Electric Co. Vallecitos Atomic Lab., San Jose,Calif.

GEMP-
General Electric Co. Flight Propulsion Lab. Dept., Cincinnati

GMAD-
General Motors Corp. Allison Div., Indianapolis, Indiana

GNE-
Air Force Institute of Tech., Wright-Patterson AFB, Ohio

H

HASL-
New York Operations Office, Health and Safety Lab., AEC

HDL-TR-
Harry Diamond Labs., Washington, D. C.

HN-
Holmes and Narver, Inc., Los Angeles

HNS-
Hazleton-Nuclear Science Corp., Palo Alto, California

HW-
Hanford Works, Richland, Washington

HW-SA-
General Electric Co. Hanford Atomic Products Operation, Richland Washington

HW-tr-
General Electric Co. Hanford Atomic Products Operation, Richland, Washington

I

IA-
Israel. Atomic Energy Commission, Rehovoth

IAE-
U. S. S. R. Sovet Ministrov. Gosudarstvennyi Komitet po Ispol'zovaniyu Atomnoi Energii

IARD-
Am. Inst. of Physics, Inf. Anal. and Retrieval Div., New York

ICRU-
ICRU Publications, P. O. Box 4869, Washington, D. C. 20008

*IDO-*
Idaho Operations Office, AEC

*IEA-*
Sao Paulo, Brazil. Universidade. Instituto de Energia Atomica

*IFA-*
Institutul de Fizica Atomica, Academia R. P. R., Bucharest (Romania)

*IITRI-*
IIT Research Inst., Chicago

*IN-*
Idaho Nuclear Corp. Idaho Falls

*INDC-*
Hanford Works, Richland, Washington

*INP-*
Institute of Nuclear Physics, Krakow (Poland)

*INR-*
Institute of Nuclear Research, Warsaw

*ISS-*
Italy. Instituto Superiore di Sanita, Rome

J

*JAERI-*
Japan. Atomic Energy Research Inst., Tokyo

*JEN-(no.)-(letter(s))/I-*
Spain. Junta de Energia Nuclear, Madrid

*JINR-P-*
Joint Inst. For Nuclear Research, Dubna, U.S.S.R.

*JPRS-*
Joint Publications Research Service, New York

*JUL-(Number)-(Letters)-*
Kernforschungsanlage, Julich, Germany

## K

*K-*
Carbide and Carbon Chemicals Corp. K-25 Plant, Oak Ridge, Tenn.

*K-DP-*
Oak Ridge Gaseous Diffusion Plant, Tennessee

*K-*
Lockheed Missiles and Space, Sunnyvale, California

*KAPL-*
Knolls Atomic Power Lab., Schenectady, New York

*KD-*
Carbide and Carbon Chemicals Corp. K-25 Plant, Oak Ridge, Tenn.

*KIR-*
Norway. Forsvarets Forskningsinstitutt, Oslo

*KN-(yr)-(no.)-*
Kaman Aircraft Corp., Kaman Nuclear Div., Colorado Springs

*KOA -*
Oak Ridge Gaseous Diffusion Plant, Tennessee

*KR-*
Norway. Institutt for Atomenergi, Kjeller

*KURRI-TR-(no)-*
Kyoto Univ., Res. Reactor Inst., Japan

*KY-*
Carbide and Carbon Chemicals Co., Paducah, Kentucky

## L

*LA-*
Los Alamos Scientific Lab., New Mexico

LA-DC-
Los Alamos Scientific Lab., New Mexico

LA-tr-
Los Alamos Scientific Lab., New Mexico

LADC-
Los Alamos Scientific Lab., New Mexico

LAMS-
Los Alamos Scientific Lab., New Mexico

LFEN-NI-
Portugal. Junta de Energia Nuclear. Laboratorie de Fisica e Engenharia Nucleares, Sacaven

LMSC-
Lockheed Aircraft Corp. Missiles and Space Div., Sunnyvale, Calif.

LNF-
Italy. Comitato Nazionale per l'Energia Nucleare. Laboratori Nazionali, Frascati

LTV-
Ling-Temco-Vaught, Dallas, Texas

LYCEN-
Universite. Institut de Physique Nucleaire

## M

MIT-
Massachusetts Inst. of Tech., Cambridge, Mass.

MIT-NE-
Massachusetts Inst. of Technology, Cambridge, Mass.

ML-TDR-
Research and Technology Div., Air Force Materials Lab., Wright-Patterson AFB, Ohio

MLM-
Mound Lab., Miamisburg, Ohio

MMM-(no.)-(no.)-
Minnesota Mining and Mfg. Co., St. Paul. Isotope Power Lab.

MMPP-
Michigan. Univ., Ann Arbor. Michigan Memorial-Phoenix Project

MND-
Martin Co., Baltimore

MND-P-
Martin Co. Nuclear Div., Baltimore

MPC-
Combustion Engineering, Windsor, Conn.

MPS-INTI MU/EP-(yr)-(no.)-
European Organization for Nuclear Research, Geneva (Switzerland)

MR-E-
Convair, Fort Worth, Texas

MR-N-
Convair, Fort Worth, Texas

MRC-
Monsanto Research Corp., Dayton, Ohio

## N

NAA-
North American Aviation, Inc., Downey, California

NAA-SR-
North American Aviation, Inc., Downey, California

NAMI-
Naval School of Aviation Medicine, Pensacola, Florida

NARF-(yr)-
Convair, Fort Worth, Texas

NAS-NRC-Pub-
National Academy of Sciences

NASA-
National Aeronautics and Space Administration, Washington, D. C.

NASA-CR-
National Aeronautics and Space Administration, Washington, D. C.

NASA-SP-
National Aeronautics and Space Administration, Washington, D. C.

NAVDOCKS-P-
Bureau of Yards and Docks

NAVORD-
Bureau of Ordinance (Navy)

NAVWEPS-
Naval Ordnance Lab., White Oak, Maryland

NBS-
National Bureau of Standards, Washington, D. C.

NCRP-
National Council on Radiation Protection and Measurements, Washington, D. C.

NDA(no.)-
United Nuclear Corp., Development Div., White Plains, New York

NDA(no)-(letter)-
United Nuclear Corp. Development Div., White Plains, New York

NDL-TR-
Army Chemical Corps Nuclear Defense Lab., Army Chemical Center, Maryland

NEIC-RR-
Nuclear Energy Information Center, Warsaw (Poland)

*NIJS-*
Nuklearni Institut "Josef Stefan", Ljubljana, Yugoslavia

*NIRL/M-*
Great Britain, National Inst. for Research in Nuclear Science. Harwell, Berks, England

*NIRL/R-*
Great Britain National Inst. for Research in Nuclear Science. Rutherford High Energy Lab., Harwell, Berks, England

*NOLC (see also NOL-C)-*
Naval Ordnance Lab., Corona, California

*NOL-TR-*
Naval Ordnance Lab., White Oak, Maryland

*NP-*
Division of Technical Information Extension, AEC

*NR-*
Lockheed Aircraft Corp., Marietta, Georgia

*NRL-*
Naval Research Lab., Washington, D. C.

*NRL-Memo-*
Naval Research Lab., Washington, D. C.

*NSAM-*
Naval School of Aviation Medicine, Pensacola, Florida

*NSJ-Tr-*
Japan Atomic Energy Research Inst., Tokyo

*NSL-(yr.)-(No.)-*
Northrop Corp. Northrop Space Labs., Hawthorne California

*NUC-*
Pennsylvania State Univ., University Park, Penna.

*NYO-*
New York Operations Office, AEC

O

OCD-
Office of Civil Defense, Washington, D. C.

ORNL-
Oak Ridge National Laboratory, Oak Ridge,Tennessee

ORNL-CD-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORNL-CF-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORNL-MT-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORNL-P-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORNL-RSIC-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORNL-TM-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORNL-tr-
Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORO-
Oak Ridge Operations Office, AEC

P

PA-TR-
Picatinny Arsenal, Samuel Feltman Ammunition Labs., Dover, New Jersey

PAEC(A)IN-
Philippines, Atomic Energy Commission, Manila

PAEC(D)PH-
Philippines, Atomic Energy Commission, Manila

*PB-*
Office of Technical Services, Washington, D. C.

*PD-*
National Research Council of Canada. Div. of Atomic Energy, Chalk River, Ontario

*PEL-*
Atomic Energy Board, Pelindaba (South Africa)

*PG-*
United Kingdom Atomic Energy Authority. Production Group, Risley, Lancs, England

*PINSTECH-PHY-*
Pakistan Inst. of Nuclear Science and Technology, Islamabad. Reactor Operations Div.

*PM-*
Office of Civil Defense, Washington, D. C.

*PNE-*
Peaceful Nuclear Explosions

*POR-*
Project Office's Report

*PPAD-*
Princeton-Pennsylvania Accelerator, Princeton, New Jersey

*PRWRA-GNEC-*
Puerto Rico Water Resources Authority, San Juan

*PSDC-TR-*
Protective Structures Development Center, Fort Belvoir, Va.

*PWAC-*
Pratt and Whitney Aircraft Div., United Aircraft Corp., Hartford, Conn.

Q

*NONE*

## R

*R-*
Rand Corp, Santa Monica, California

*R-(yr)-(no.)-*
Martin Co., Denver, Colorado

*R(yr)CAP(no.)-*
Canadian General Electric Co., Ltd. Civilian Atomic Power Dept., Peterborough, Ontario

*R(yr)SD-*
General Electric Co. Missile and Space Div., Valley Forge Space Technology Center, King of Prussia, Pa.

*R-OU-*
Research Triangle Inst., Durham, N. C. Operations Research Economics Div.

*R and D/P/-/-*
Atomic Power Const. Ltd., London, England

*RAS-*
General Dynamics Corp. Electric Boat Div., Groton, Conn.

*RCC-R-*
United Kingdom Atomic Energy Authority, Research Group. Radiochemical Centre, Amersham, Berks, England

*RCN-*
Reactor Centrum Nederland, Petten

*RE-*
Grumman Aircraft Engineering, Corp. Bethpage, New York, Research Department

*REIC-*
Battelle Memorial Inst., Radiation Effects Information Center, Columbus, Ohio

*REIC-Memo-*
Battelle Memorial Inst. Radiation Effects Information Center, Columbus, Ohio

RFA-
Aktiebolaget Atomenergi, Stockholm

RFP-Trans-
Dow Chemical Co., Rocky Flats Div., Golden, Colorado

RF/FI(yr.)(no.)-
Aktiebolaget Atomenergi, Studsvik, Sweden

RHEL/M-
National Inst. for Research in Nuclear Science, Chilton (England)
Rutherford High Energy Lab.

RHEL/R-
National Inst. for Research in Nuclear Science, Chilton (England)
Rutherford High Energy Lab.

RIFP-
Kyoto Univ. (Japan) Research Inst. for Fundamental Physics

RISO-
Denmark, Atomenergikommissionen. Forsogsinstitut, Riso

RISO-M-
Denmark, Atomenergikommissionen, Forsogsinstitut, Riso

RL-SA-
General Electric Co. Hanford Atomic Products Operations,
Richland, Washington

RM-(no.)-(RAND)-
RAND Corp., Santa Monica, California

RM-(no.)-PR-
Rand Corp, Santa Monica, California

RP/TN (no.)-
Australian AEC, Sutherland, N.S.W., Australia

RPI-
Rensselaer Polytechnic Inst., Troy, New York

RPP/(letter)/(number)-
Rutherford High Energy Lab., Chilton, Berks, England

*RR-TR-*
Army Missile Command, Redstone Arsenal, Ala. Physical Sciences Lab.

*RRA-*
Radiation Research Associates, Inc., Fort Worth, Texas

*RSA-*
Aktiebolaget Atommenergi, Stockholm

*RSIC-*
Redstone Arsenal, Alabama

*RT-*
Italy. Comitato Nazionale per l'Energie Nucleare, Rome

*RTD-TDR-*
General Atomics, General Dynamics, San Diego, California

*RTD-TDR-*
Research and Technology Div., Air Force Weapons Lab., Kirtland Air Force Base, New Mexico

*RTI-*
Research Triangle Inst., Durham, North Carolina

## *S*

*SAR-G-*
France. Commissariat a l'Energie Atomique. Centre d'Etudes Nucleaires, Grenoble

*SB-*
Office of Technical Services, Washington, D. C.

*SB-(yr)-*
Lockheed Missiles and Space Co., Sunnyvale, California

*SC-(no.)(TR)-*
Sandia Corp., Albuquerque, New Mexico

*SC-DC-*
Sandia Corp., Albuquerque, New Mexico

SC-R-
Sandia Corp., Albuquerque, New Mexico

SC-TM (see also TM-)-
Sandia Corp., Albuquerque, New Mexico

SCDC-
Sandia Corp., Albuquerque, New Mexico

SCL-
Sandia Corp., Livermore Lab., Livermore, California

SCR-
Sandia Corp., Albuquerque, New Mexico

SCTM-
Sandia Corp., Albuquerque, New Mexico

SGAE-PH-
Oesterreichische Studiengesellschaft fuer Atomenergie BMBH, Seibersdorf

SID-
North American Aviation, Inc. Space and Information Systems Div. Downey, California

SLAC-
Stanford Linear Accelerator Center

SM-
Air Research and Development Command, Andrews AFM, Maryland

SM-
Douglas Aircraft Co., Inc., Santa Monica, California

SN-
National Engineering Science Co., Pasadena, California

SSD-TDR-
Aerospace Corp. Physical Research Lab., El Segundo, California

STI/PUB-
International Atomic Energy, Vienna

*STL-*
Space Technology Labs., Canoga Park, California

*SWC-Tr(yr.)-(no.)-*
Air Force Special Weapons Center, Kirtland AFB, New Mexico

*SWP-P-*
United Kingdom Atomic Energy Authority, Industrial Group H. Q., Risley, Lancs, England

## T

*TID-*
Division of Technical Information Extension, AEC, Oak Ridge, Tennessee

*TIM-*
Pratt and Whitney Aircraft Div., United Aircraft Corp., Hartford, Conn.

*TO-B-*
Technical Operations Research, Burlington, Mass.

*TO-B-*
Defense Documentation Center, Alexandria, Virginia

*TOI-*
Technical Operations, Inc., Arlington, Mass.

*TPI-*
Atomic Energy of Canada Ltd. Chalk River Project, Chalk River, Ontario

*TRG-*
United Kingdom Atomic Energy Authority, Reactor Group, England

*TRG-Report-*
United Kingdom Atomic Energy Authority, Reactor Group. Risley Lancs, England

*TT-*
Office of Technical Services, Washington, D. C.

TW-
Groningen Rijksuniversiteit (Netherlands). Mathematisch Instituut

U

UCC-DSSD-
Union Carbide, White Plains, New York

UCD-
California University, Davis

UCID-
California. Univ., Berkeley, Radiation Lab.

UCRL-
California. Univ., Berkeley, Lawrence Radiation Lab.

UJV-
Ceskoslovenska Akademie Ved. Ustav Jaderneho Vyzkumu, Rez

UMNE-
Maryland. Univ., College Park

UNC-
United Nuclear Corp., Development Div., White Plains, New York

UNUCOR-
United Nuclear Corp., Development Div., White Plains, New York

URS-
United Research Services, Inc., Burlingame, California

USAFIT-TR-
Air Force Inst. of Tech., Wright-Patterson AFB, Ohio

USNCEL-
U. S. Naval Civil Eng. Lab., Port Huenene, California

USNRDL-
Naval Radiological Defense Lab., San Francisco

USNRDL-TR-
Naval Radiological Defense Lab., San Franciso, California

V

VUT-
Vysoke' Uceni Technicki, Tecli-Uni. Brno, Czechoslovakia

W

WADC-
Wright Air Development Center, Wright-Patterson AFB, Ohio

WADC-TR-(yr)-
Wright Air Development Cneter, Wright-Patterson AFB, Ohio

WAL-TR-
Watertown Arsenal Lab., Mass.

WANL-
Westinghouse Electric Corp., Astronuclear Lab., Pittsburgh

WANL-TME-
Westinghouse Electric Corp. Astronuclear Lab., Pittsburgh

WANL-THR-
Westinghouse Electric Corp., Astronuclear Lab., Pittsburgh

WAPD-
Westinghouse Electric Corp. Atomic Power Div., Pittsburgh

WAPD-(letters)-
Westinghouse Electric Corp., Bettis Plant, Pittsburgh

WASH-
Atomic Energy Commission, Washington, D. C.

WCAP-
Westinghouse Electric Corp. Commericial Atomic Power Activity
Pittsburgh

*WES-TR-*
Army Engineer Waterways Experiment Station, Vicksburg, Mass.

*WKNL-*
Kidde (Walter) Nuclear Labs., Inc., Garden City, New York

*WL-TDR-*
Air Force Weapons Lab., Kirtland AFB, New Mexico

*WT-*
Assigned to reports to the Scientific Director of Joint AEC-DOD weapon tests

## X

*X(yr.)-(no.)-*
National Aeronautics and Space Administration, Washington, D. C.

*XDC-(yr)-(mo)-*
General Electric Co. Aircraft Nuclear Propulsion Dept., Cincinnati

## Y

*Y-*
Union Carbide Nuclear Co. Y-12 Plant, Oak Ridge, Tennessee

*Y-DR-*
Union Carbide Corporation, Oak Ridge, Tenn. Y-12 Plant

*Y-EB-*
Union Carbide Corporation, Oak Ridge, Tenn. Y-12 Plant

## Z

NONE

# OAK RIDGE NATIONAL LABORATORY

OPERATED BY

**UNION CARBIDE CORPORATION**

NUCLEAR DIVISION


POST OFFICE BOX X
OAK RIDGE, TENNESSEE 37830


March 1969


RADIATION SHIELDING INFORMATION CENTER
TELEPHONE: 615 - 483-8611, EXT. 3-6944


TO: RSIC Space-Accelerator Shielding Distribution List

SUBJECT: Selective Dissemination of Information Service

For several years the Radiation Shielding Information Center has operated a selective dissemination of information (SDI) service. This is an automatic computerized service designed to inform the working scientist or engineer of current publications likely to be of interest to him.

Briefly, the system works as follows. For each participant, the computer compares subject category numbers of the participant's "interest profile" with category numbers assigned each literature specimen entered into the RSIC computer-based information system. When there is a match, an abstract is printed on a 5 in. x 8 in. card ready for mailing. Normally, there will be several abstracts printed for each participant at each system update. Additional information on the SDI is given in the RSIC Newsletter No. 51 (February 1969).

It has been several years since most of the interest profiles were constructed. Many now are out of date. Therefore, we are asking all those currently participating to submit a new profile. A current list of subject categories for the space-accelerator literature is enclosed for your convenience. If you wish to participate in the reactor-weapons shielding SDI, a list of subject categories is available upon request.

At present, this service is free of charge. We hope this will continue indefinitely.

In constructing an interest profile there are several things to keep in mind.


UCN-8144
(3 5-67)

(1) The service is designed to provide an abstract to the individual working scientist or engineer (not libraries, etc.).

(2) The literature covered normally has been previously announced in the RSIC newsletter by title only. In other words, broader and faster coverage is provided in the newsletter. Thus the normal profile can be highly selective since items of mild or fringe interest can be noted in the newsletter.

(3) The abstracts will be available at a later date in the RSIC notebooks, such as ORNL-RSIC-12 which will contain all literature accepted into the RSIC space-accelerator shielding file.

(4) One does not need to include possible future interests since retrospective searches can be performed when needed and profiles may be changed at any time.

(5) Several categories are not covered very extensively by RSIC. We tend to cover state-of-the-art articles only for instrumentation, radiation damage, biological effects, neutron thermalization, space radiation sources, and compilations only for cross sections.

As mentioned previously, we will need to have a new profile for all those who participate. Submitting your new profile will assure us of your interest and assure you of continued service.

Please write or call if further information is needed.

Sincerely,

D. K. Trubey

D. K. Trubey

DKT:pcg

Enclosures:

1. Space-Accelerator Category List
2. Instructions for Submission of Profile

RSIC Selective Dissemination of Information (SDI)
Instructions and Notes Concerning the
Submission of an Interest Profile

1. Examine the list of subject categories and select a maximum of 10-15 numbers which correspond to your research interests. A larger profile set is generally not needed since retrospective searches with complete printouts of titles of papers in requested categories are available at any time upon request.

2. The abstract cards are limited to two cards per document dropped. Thus, long abstracts will be truncated. If possible, the author's abstract is used. The category numbers of the document are shown which may be used to organize your file if you retain the cards.

3. It is important to us that you return the feedback card which accompanies each mailing of abstracts. This helps us to gauge the effectiveness of the SDI program. The column marked "P" is to help us determine if our service is prompt enough. This column should be marked independently of the other columns. In other words, a document may be of interest to you whether you have seen it previously or not.

4. Make your profile list and mail the list to RSIC. If the titles of particular categories are not clear, please request clarification. (Phone number: 615-483-8611, Ext. 3-6944; address given below.) It is probably best for you to retain the complete list of categories for further reference and for use when requesting computer searches. Mail your list to:

Radiation Shielding Information Center
Attn: Miss Jane Gurney
P. O. Box X
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

February 1969

RSIC SUBJECT CATEGORIES

Space-Accelerator Shielding

February 1969

| Cat. No. | Category |
|---|---|
| | *Space Radiation Sources* |
| 010000 | Space Radiation Sources - General |
| 011100 | Radiation Belts - Van Allen - Protons |
| 011200 | Radiation Belts - Van Allen - Electrons |
| 012000 | Radiation Belts - Artificial Electron |
| 021000 | Solar Flares - Protons |
| 022000 | Solar Flares - Heavy Nuclei |
| 023000 | Solar Flares Prediction |
| 030000 | Cosmic Rays |
| | *Cross-Section Data* |
| 111000 | Stopping Power - Heavy Particles |
| 112110 | Elastic Scattering - Nucleon-Nucleon |
| 112120 | Elastic Scattering - Pion-Nucleon |
| 112210 | Elastic Scattering - Nucleon-Nuclei |
| 112220 | Elastic Scattering - Pion-Nuclei |
| 113110 | Nonelastic Scattering - Nucleon-Nucleon |
| 113120 | Nonelastic Scattering - Pion-Nucleon |
| 113210 | Nonelastic Scattering - Nucleon-Nuclei |
| 113220 | Nonelastic Scattering - Pion-Nuclei |
| 113300 | Alpha-Particle Reactions |
| 121000 | Energy Loss Processes for Electrons |
| 122100 | Production by Photons - Pions |
| 122200 | Production by Photons - Nucleons |
| 122300 | Production by Photons and Electrons - Electrons and Photons |

| Cat. No. | Category |
|---|---|
| | *Particle Transport* |
| 211000 | Space Shielding Particle Transport - General |
| 212100 | Space Shielding Particle Transport - Experimental-Nucleons |
| 212200 | Space Shielding Particle Transport - Experimental-Electrons, Photons |
| 213100 | Space Shielding Particle Transport - Theory, Calculations-Nucleons |
| 213200 | Space Shielding Particle Transport - Theory, Calculations - Electrons, Photons |
| 221000 | Accelerator Shielding Particle Transport - General |
| 222100 | Accelerator Shielding Particle Transport - Experimental - Nucleons, Mesons |
| 222200 | Accelerator Shielding Particle Transport - Experimental - Electrons, Photons |
| 223100 | Accelerator Shielding Particle Transport - Theory, Calculations - Nucleons, Mesons |
| 223200 | Accelerator Shielding Particle Transport - Theory, Calculations- Electrons, Photons |
| | *Shielding* |
| 311000 | Space Shielding - General |
| 312000 | Space Shielding - Experiments |
| 313000 | Space Shielding - Van Allen Protons |
| 314000 | Space Shielding - Solar Flares |
| 315000 | Space Shielding - Cosmic Rays |
| 316000 | Space Shielding - Electrons |
| 317000 | Space Shielding - Magnetic, etc. |
| 321000 | Supersonic Transport Shielding - Solar Flares |
| 322000 | Supersonic Transport Shielding - Cosmic Rays |
| 331000 | Accelerator Shielding - General |

| Cat. No. | Category |
|---|---|
| | *Shielding* |
| 332000 | Accelerator Shielding - Details |
| 340000 | Dose |

NOTE: (1) Space Radiation and Cross Section Data include only review articles.

(2) The Dose category covers calculations and experiments on physical absorbed dose and calculations of biological dose (i.e., flux-to-dose-rate conversions).