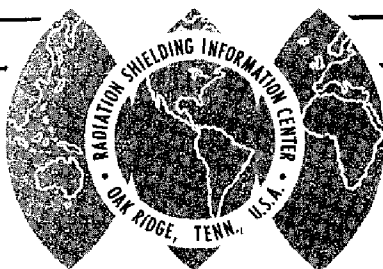


# RSIC Newsletter



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. 79

June 1971

*Reading maketh a full man;  
conference a ready man;  
and writing an exact man.*

- Bacon - Essays

### SPECIAL SESSION ON "FAST REACTOR SHIELDING" *at 1971 ANS Winter Meeting*

Wade Selph (GEES), Program Chairman of the Shielding & Dosimetry Division of the American Nuclear Society, has announced that a special session on "Fast Reactor Shielding" will be held at the 1971 ANS Winter Meeting in Miami Beach, October 17-21. Siegfried Gerstl of Westinghouse Advanced Reactors Division, organizer of the session, has submitted the following tentative list of invited papers which will be presented at the meeting (list incomplete):

1. "Projected LMFBR Shielding Needs and AEC/RDT Programs," J. Lewellen, P. B. Hemmig, W. H. Hannum (AEC/RDT);
2. "Shielding the Fast Flux Test Facility (FFTF)," J. L. Rathbun, S. A. W. Gerstl, P. F. Fox (WARD), W. L. Bunch, E. T. Boulette (WADCO);
3. "FFTF Related Studies in the ORNL/LMFBR Shielding Program," F. R. Mynatt, C. E. Clifford, F. J. Muckenthaler, R. F. Maerker, M. L. Gritzner, L. R. Williams (ORNL), J. L. Rathbun (WARD);
4. "Interpretation of Neutron Penetration and Nuclear Heating Measurements at RAPSODIE," C. Devillers, J. Moreau, Y. Oceraires, with the cooperation of J. Culambourg and J. Rastoin (CEA, France);
5. "Two-Dimensional Shielding Calculations Using a Combination of Line-of-Sight Method and Diffusion Theory," H. Vossebrecker (INTERATOM, Germany);
6. "The Influence of Variations in Composition, Primarily Water Content, on Neutron Penetration Through Concrete Slabs," A. B. Chilton (University of Illinois); and
7. "CINNA - A Neutron Shielding Code with High Energy Resolution," H. Penkuhn (EURATOM).

A panel on "Significant Problems in Transport Theory" is being planned for the Miami meeting under the auspices of the Mathematics and Computation Division, by W. Hendry (LASL), R. Erdmann (UCLA), and R. Dalton (U. of Florida).

This preannouncement is intended to assist those members of the shielding community who have to make long-term plans to attend this meeting.

#### ENEA CPL SPONSORS SEMINAR-WORKSHOP

A Seminar-Workshop on the "Application of Finite Element Methods to Stress Analysis Problems in Nuclear Engineering" will be held June 30 - July 1, 1971 at Ispra (Varese), Italy, under the sponsorship of the European Nuclear Energy Agency's Computer Programme Library (ENEA CPL). Participants from the United States and Canada are invited to attend as well as those from the ENEA countries. The proposed agenda follows.

- (a) A survey of finite element methods to stress analysis problems with emphasis on their application to nuclear engineering problems. (Prof. Argyris, Stuttgart University, Invited Paper).
- (b) A description of the SAFE programs, with emphasis on numerical analysis, implementation and execution problems, and overall accuracy questions which arise in their use. (Dr. Mazzoli, Agip Nucleaire).
- (c) The study of the optimum value for the over-relaxation factors in the over-relaxation method. (Dr. Sartori, Agip Nucleaire).
- (d) Numerical considerations on the finite element method as applied to SAFE programmes. (Prof. Galligani, Euratom, Ispra and University of Bari).
- (e) The use of finite element methods in TNPG. (Mr. Keller, Mr. Parker, The Nuclear Power Group).
- (f) GOLIA: A computer program for the stress analysis of complex structures in the presence of creep, dimensional changes and a thermal field. (J. Donea, Materials Division, Euratom, Ispra).
- (g) A comparison of different approaches to finite element calculations (STRU DL, SAFE, GC-21). (Dr. Bozzo, University of Bari).
- (h) MESHREF and STRESSPLOT: Programs to plot the results of a two dimensional triangular finite element program and to generate automatically triangular finite elements. (J. Reynen, Euratom, Ispra).
- (i) Experiences with implementation and use of the SAFE programs. (G. Kuich, P. Mitterbacher, and J. Dissieux, Brown Boveri, Baden).

### CURRENT WORK AND PROBLEMS

We continue, with this issue of the Newsletter, the *CURRENT WORK AND PROBLEMS* feature which reports in brief on work in progress at various installations. During the last month, no more of our customers responded to our request for information on the work that they were doing by filling out the questionnaire attached to the back of the February 1971 Newsletter. We urge those of you who have not yet responded to do so soon.

We hope that some of you will read this section not only to find what others are doing which may help you, but also to find where you might be able to give a little helpful advice. If you have any suggestions, especially concerning areas where a need for work is felt, send a note to the person who has expressed the need. It will be appreciated.

The names in parentheses below identify the persons who reported the work at their installation.

At CLARKSON COLLEGE OF TECHNOLOGY, Potsdam, New York (R. Madey, P. J. McNulty, F. Waterman), the problem of visual sensations in the eye induced by heavy nuclei bombardment is being studied. In addition, measurements are being made of neutron spectra from bombardment of thick uranium targets by 740 MeV protons.

The problem of shielding of experiments orbited in satellites by the French Space Administration (C.N.E.S.) is being studied at the DEPARTEMENT D'ETUDES ET DE RECHERCHES EN TECHNOLOGIE SPATIALE, Toulouse, France, (R. Schuttler.) Dose calculations at interior point are done using electron penetration codes. Vette's data on trapped electron and proton orbital fluxes are utilized. A need is felt for immediate effort in developing methods of quickly estimating the bremsstrahlung-induced dose generated inside a satellite.

Measurements of depth-dose distributions in metals due to 2 MeV electrons are being made at the NATIONAL BUREAU OF STANDARDS, Washington, D.C. (H. Eisen, guest worker from Harry Diamond Laboratories). The measurements are made as a function of target thickness and incident beam angle using radiochromic film with a typical precision of  $\pm 5\%$ . Targets of aluminum, copper, and tin are used and results are being compared to those of Nakar and to calculations with ETRAN.

NUCLEAR ENGINEERING DEPARTMENT, KANSAS STATE UNIVERSITY, Manhattan, Kansas (W. Meyer, J. Mingle). The proposed program is as follows:

- 1) Neutron shield penetration experimental parameters will be studied and evaluated to describe an experimental procedure and physical conditions to serve later as a "standard neutron penetration experiment."

- 2) Spatially dependent fast neutron (0.7 to approximately 12 MeV) penetration spectra will be measured for a thermal fission spectrum of fast neutrons from the collimated KSU TRIGA fast beam port impinging on semi-finite slabs (effectively infinite with respect to neutron diffusion

#### EXTENSION TO DLC-14/NEUTRON AND SECONDARY GAMMA-RAY TRANSPORT IN AIR

DLC-14/AIR originally was a 40-group coupled set of cross sections for air which were provided so that ANISN users might be able to reproduce the results published in "Neutron and Secondary Gamma-Ray Transport in Infinite Homogeneous Air" (ORNL-4464) by E. A. Straker and M. L. Gritzner of the ORNL Neutron Physics Division. It has recently been augmented to include all input data for running an ANISN case for a 12.2 to 15 MeV point source in homogeneous air. The output from this case includes the calculation of various detector responses for neutrons and gamma rays.

Those who wish to receive DLC-14 should send a full reel of magnetic tape to RSIC, indicating how it is to be written.

#### SECONDARY GAMMA-RAY PRODUCTION LIBRARY UPDATED

The DLC-12/POPLIB has recently been updated with the correction of three and the voiding of one data sets. In addition, ten new data sets were added so that the total number of data sets is now 233. The updated library is designated DLC-12B. The library is intended for use with the PSR-11/POPOP4 code which generates neutron to gamma-ray multigroup transfer cross sections for eventual use in coupled multigroup calculations. Those interested in obtaining the library should send one full reel of magnetic tape.

#### CORRECTION TO CCC-156/MECC 3 DOCUMENTATION

Additional descriptive information concerning input for the four analysis codes has been added to the CCC-156/MECC 3 documentation as an insert. New requesters will receive complete documentation. For those now using the programs the new information is available on request.

#### CORRECTION TO CCC-128/06R

F. A. R. Schmidt of Stuttgart Technical University, Germany, and Wayne Morrison of ORNL have called attention to corrections which should be made in CCC-128/06R routines. The corrections have been made in RSIC decks, and the information is available to those now using 06R. Refer to this Newsletter when requesting the material.

### PERSONAL ITEMS

*Ralph E. Best* is now associated with Nuclear Fuel Services in Rockville, Maryland. He was formerly with Battelle Memorial Institute.

*Michael Nagy*, Dipl. Physicist of the Budapest, Hungary, Technical University Reactor Group is spending several months this year working with the Radiation Shielding Group of CNEN, CSN Casaccia, Italy.

*J. R. Streetman*, Los Alamos Scientific Laboratory, is transferring from the N-2 Division to the M-Division Office, Advanced Concepts Group. His new assignment will be in connection with space propulsion.

A recent communication from *Dr. J. Weitman* of AB Atomenergi, Studsvik, Sweden, indicates that he is now head of the company's program and market development and *Dr. J. Elkert* now heads the shielding group. Dr. Weitman is still responsible for their dosimetry work.

We note that the former Radiological Protection Service of Belmont, England, is now addressed as National Radiological Protection Board.

### VISITORS TO RSIC

Visitors to RSIC during the month of May were: G. Burger, Company for Radiation Research, Munchen, Germany; L. Harris, Gulf Radiation Technology, San Diego, Calif.; Margaret S. Hibbs, Oak Ridge Associated Universities, Oak Ridge, Tenn.; A. Kohsaka, European Nuclear Energy Agency Computer Programme Library, Ispira, Italy; S. Makra, Central Research Institute for Physics, Budapest, Hungary; J. Ridihaigh, Battelle Memorial Institute, Columbus, Ohio; G. Ulrikson, Environmental Information System, ORNL; K. J. Yost, Purdue University, Lafayette, Ind.

### 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 National Technical Information Service (NTIS), Department of Commerce, 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.

#### REACTOR AND WEAPONS SHIELDING

AD-711005 (THESIS)

June 1970

Energy Loss of High-Energy Electrons in Tin, Lead, and Gadolinium  
M. L. Mosbrooker, D. L. Sandquist  
(Naval Postgraduate School, Monterey, Calif.)  
Avail.: NTIS

AHSB(S) R-192

December 1970

Risk Evaluation for Any Curie and Release Spectrum and Any Dose-Risk Relationship  
G. D. Bell

ANL-7713

January 1971

The ARC System Neutronics Input Processor  
E. A. Kovalsky, D. E. Neal  
Avail.: NTIS

BNL-50145, Rev.

September 1970

Tabulated Dose Uniformity Ratio and Minimum Dose Data for Gamma Irradiator Design  
F. X. Rizzo, L. Galanter

BNL-50147, Rev.

December 1970

Tabulated Dose Distribution Data for Gamma Irradiator Design  
F. X. Rizzo, L. Galanter

BNL-50274 (ENDF 102, Vol. 1)

October 1970

Data Formats and Procedures for the ENDF Neutron Cross Section Library  
M. K. Drake

BNWL-1489

September 1970

In-Phantom Dosimetry of 238-Pu Heat Sources in Relation to Circulatory Support Systems  
F. T. Cross, J. C. Sheppard  
Avail.: Dep.; NTIS

BNWL-CC-1546 (Rev. 2)

1969

BNW Model 10 Shipping Container for Non-Irradiated Fissionable  
Material: Basis for DOT Special Permit  
C. L. Brown, L. A. Lawrence  
Avail.: NTIS

BNWL-TR-66

1970

Neutron Transport by a Moving Medium  
G. Y. Vasiliev, D. M. Kaminker, K. A. Konoplev, A. A. Kostritza  
(Translated from At. Energ. (USSR); 28: 356-7 (1970))  
Avail.: Dep.; NTIS

BRH/DBE-70-7

Radiation Bio-Effects. Summary Report, January-December 1970  
Donald M. Hodge (comp. and ed.)  
(Bureau of Radiological Health, Rockville, Md.)

BRH/DMRE-71-1 (PB-197698)

February 1971

Summary of Federal Regulations for Packaging and Transportation of  
Radioactive Materials  
F. B. Conlon  
Avail.: NTIS

CEA-CONF-1566 (CONF-690963-3; N71-17095) (In French) 1969

Calculations of the Attenuation of Neutrons by Complex Geometries  
J. C. Nimal

CEA-N-1394 (In French)

1970

Interpretation of the Experiments Carried Out on the Model of Bugey  
Axial and Lateral Cavities  
L. Bourdet, J. Duco  
Avail.: NTIS

CEA-N-1408 (In French)

February 1971

Radioactive Contamination in Workshops and Laboratories, Volume III.  
Individual Protection Techniques  
Bernard Werderer  
Avail.: Dep.; NTIS (U.S. Sales only)

CSIRO-Trans.10069

1968

Spatial Distribution of Epithermal Neutrons in a Two-Layered Medium  
with a Cylindrical Boundary  
B. M. Rudyk  
Avail.: NTIS

CONF-691106, 3-11

November 1969

Dosimetry of Mixed Fields of Neutron and Gamma Radiation: A Review  
F. S. Williamson  
Avail.: Dep.; NTIS \$10.00

CONF-691106, pp. 12-27

November 1969

Neutron Dosimetry with Tissue Equivalent Chambers  
L. J. Goodman  
Avail.: Dep.; NTIS \$10.00

CONF-691106, 30-45

November 1969

Recent Progress in Neutron Solid-State Dosimetry  
K. Becker  
Avail.: Dep.; NTIS, \$10.00

CONF-710301-7

1970

Effect of Cross Section Variation on Integrals Measured in the CFRMF  
J. J. Scoville  
(From 3rd Conference on Neutron Cross Sections and Technology,  
Knoxville, Tenn. 15 Mar. 1971)  
Avail.: Dep.; NTIS

DP-1246

March 1971

$^{252}\text{Cf}$  Shielding Guide  
D. H. Stoddard, H. E. Hootman  
Avail.: Dep.; NTIS

ESD-203 (CONF-710503-1)

April 17, 1970

Application of Reliability Engineering Concepts to the Design of  
Radiation Therapy Accelerators  
D. F. Herring, J. Dobson, R. M. Potenza  
(From International Symposium on RNA viruses and host genome in  
oncogenesis, Amsterdam, Netherlands May 12, 1971)  
(For Stanford Univ., Calif., Dept. of Radiology)

EURFNR-842

Measurement of Neutron Spectra Within the 1 eV to 10 keV Energy Range  
by Means of the Sandwich Technique  
M. Mueller  
(Translation of Report KFK-1233)  
Avail.: Dep.; NTIS

GA-10248 (DASA-2570; AD-717639)

July 1970

Line and Continuum Gamma-Ray Yields from Thermal-Neutron Capture in  
75 Elements  
V. J. Orphan, N. C. Rasmussen  
Avail.: NTIS



GA-10280 (N71-14795)

August 24, 1970

Fast Reactor Spectrum Measurements. Quarterly Progress Report,  
Period Ending 31 July 1970  
J. C. Young, P. d'Oultremont, G. M. Borgonovi, A. Rindfleisch,  
E. Profio  
Avail.: NTIS

HEDL-TME-71-36 (ENDF-143)

March 1971

Group Constants for Fast Reactor Calculations  
R. B. Kidman, R. E. Schenter  
Avail.: Dep.; NTIS

IDO-12073

July 1970

Annual Report, 1969  
Health Services Lab., Idaho Operations Office (AEC), Idaho Falls  
Avail.: NTIS

JAERI-1197 (In Japanese and English)

March 1970

Proceedings of the Third Conference on Inelastic Neutron Scattering,  
Tokai, 1969  
Japan Atomic Research Institute, Tokai, Tokai Research Establishment

KAPL-P-3931 (CONF-710301-3)

1969

Cross-Section Data Analysis Utilizing an Interactive Graphics Display  
M. Lubert, R. C. Block  
(From 3rd Conference on Neutron Cross Sections and Technology,  
Knoxville, Tenn.)  
Avail.: Dep.; NTIS

KEES-SR-92

February 15, 1971

A University Design Study of Reduction Factors in Typical American  
Houses with Fallout Shelters  
R. S. Reynolds, R. E. Faw, M. J. Robinson

KFK-1158

March 31, 1970

Radiation Protection and Safety Department. Annual Report, 1969  
H. Kiefer, W. Koelzer (Eds.)  
Avail.: NTIS

LA-4442-TR

1969

Third Report on the Activity of the Respiratory Protection Working  
Group  
Rolf Ohl  
(Translated from Atemschultz-Inform., 8(1), 3-6 (1969))

LA-4592

December 1970

The Integrated Compton Cross Section and Its Use in a Monte Carlo Scheme

G. S. Fraley

Avail.: NTIS

LA-4646-MS

February 1971

Discrete Ordinates Treatment of Induced Scattering

K. D. Lathrop

Avail.: NTIS

LA-4652-MS

March 1971

Compilation of Requests for Nuclear Cross Section Measurements

Nuclear Cross Sections Advisory Committee

Avail.: NTIS

NASA-CR-102964 (WANL-PR-(LL)-034-Vol. 1; N-71-15162) August 1970

Nuclear Rocket Shielding Methods, Modification, Updating, and Input Data Preparation. Volume 1: Synopsis of Methods and Results of Analysis. Final Progress Report.

R. G. Soltesz, R. K. Disney, R. S. Kaiser, J. Jedruch, S. L. Zeigler

Avail.: NTIS

NASA-CR-102965 (WANL-PR-(LL)-034-Vol. 2; N71-15163) August 1970

Nuclear Rocket Shielding Methods, Modification, Updating, and Input Data Preparation. Volume 2: Compilation of Neutron and Photon Cross Section Data. Final Progress Report.

R. G. Soltesz, R. S. Kaiser, R. K. Disney

Avail.: NTIS

NASA-CR-102966 (WANL-PR-(LL)-034-Vol. 3; N71-15164) August 1970

Nuclear Rocket Shielding Methods, Modification, Updating, and Input Data Preparation. Volume 3: Cross Section Generation and Data Processing Techniques. Final Progress Report.

R. G. Soltesz, R. K. Disney, S. L. Zeigler

Avail.: NTIS

NASA-CR-102967 (WANL-PR-(LL)-034-Vol. 4; N71-15165) August 1970

Nuclear Rocket Shielding Methods, Modifications, Updating, and Input Data Preparation. Volume 4: One-Dimensional, Discrete Ordinates Transport Technique. Final Progress Report.

R. G. Soltesz, R. K. Disney

Avail.: NTIS

NASA-CR-102968 (WANL-PR-(LL)-034-Vol. 5; N71-15166) August 1970

Nuclear Rocket Shielding Methods, Modification, Updating, and Input Data Preparation. Volume 5: Two-Dimensional, Discrete Ordinates Transport Technique. Final Progress Report.

R. G. Soltesz, R. K. Disney, J. Jedruch, S. L. Zeigler

Avail.: NTIS

- NASA-CR-102969 (WANL-PR-(LL)-034-Vol. 6; N71-15167) *August 1970*  
Nuclear Rocket Shielding Methods, Modification, Updating, and Input  
Data Preparation. Volume 6: Point Kernel Techniques. Final Progress  
Report.  
R. K. Disney  
Avail.: NTIS
- NASA-CR-111545 (TR-4, N71-15112) *October 1970*  
Statistical Simulation Procedures  
R. N. Tremeling, II, W. B. Smith, L. J. Ringer, J. L. Oglesby  
Avail.: NTIS
- NASA-CR-116518 (FZK-351-4) *March 1969*  
NERVA Irradiation Program, GTR Test 21. Volume 4: Effect of  
Radiation on Structural Materials Tested at Cryogenic and Elevated  
Temperatures  
R. H. McDaniel, N. D. King, J. E. Warwick, J. H. Lewis  
Avail: NTIS as N71-17351)
- NASA-CR-116519 (FZK-351-3) *November 1969*  
NERVA Irradiation Program, GTR Test 21. Volume 3: Thermal Con-  
ductivity and Electrical Resistivity of Selected NERVA Materials  
E. E. Palmer, J. R. Bell, R. D. Crabtree, H. L. Wattier, H. L.  
Springer, et al.  
Avail.: NTIS as N71-17352
- NBS-SPEC. PUBL.-322 *May 1970*  
Photonuclear Data Index, January 1965-January 1970  
National Bureau of Standards, Washington, D.C.
- NCRP-39 *January 15, 1971*  
Basic Radiation Protection Criteria  
National Council on Radiation Protection and Measurements, Washington,  
D.C., \$2.00
- NIRS-RSD-26 *February 1970*  
Radioactivity Survey Data in Japan. Number 26.  
Avail.: Dep.; NTIS (U.S. Sales only)
- ORNL-4617 (ENDF-139) *April 1971*  
A Re-evaluation of Natural Iron Neutron and Gamma-Ray Production  
Cross Sections - ENDF/B Material 1124  
S. K. Penny, W. E. Kinney  
Avail. NTIS

ORNL-NSIC-78 (N71-17223)

October 1970

Compilation of National and International Nuclear Standards (Excluding U.S. Activities). 6th Edition, 1970

NSIC

Avail.: NTIS

ORNL-TM-3016

July 1970

Transportation Systems and Dual Purpose Blast Shelters

G. A. Cristy

Avail.: NTIS

ORNL-TM-3169

January 1971

Effect of Fast Neutron Irradiation on the Creep-Rupture Properties of Type 304 Stainless Steel at 600°C

E. E. Bloom, J. O. Stiegler

Avail.: Dep.; NTIS

ORNL-TM-3200 (THESIS)

April 1971

Application of Variational Synthesis to Solutions of Multidimensional Neutron Transport Problems

W. R. Cobb

ORNL-TM-3216

November 1970

Radiological Considerations in the Use of Natural Gas from Nuclearily Stimulated Wells

D. G. Jacobs, C. J. Barton, M. J. Kelly, E. G. Struxness

Avail.: NTIS

ORNL-TM-3235

November 12, 1970

Bulk Shielding Facility Quarterly Report, July - September 1970

W. H. Tabor, S. S. Hurt, III

Avail.: NTIS

ORNL-TM-3239

September 1970

A Survey of Needs for Radioactivity Standards

S. A. Reynolds

ORNL-TM-3329

April 1971

Neutron Depth Dose Distributions in Heterogeneous Phantoms

John W. Poston

Avail.: Dep.; NTIS

(Thesis - submitted to Georgia Institute of Technology, Atlanta, Ga.)

ORNL-TM-3334

March 29, 1971

The Index Data System: An Index of Nuclear Data Libraries Available at ORNL

J. L. Lucius, J. D. Jenkins

Avail.: NTIS

ORNL-TM-3364

April 1, 1971

The ORNL-SNAP Shielding Program  
F. R. Mynatt, C. E. Clifford, F. J. Muckenthaler, M. L. Gritzner

ORNL-TM-3367

April 1, 1971

The POPOP4 Library and Codes for Preparing Secondary Gamma-Ray  
Production Cross Sections  
W. E. Ford, III

ORNL-TM-3371

April 5, 1971

Simultaneous Determination of Fast-Neutron Spectra by Time-of-Flight  
and Pulse-Height Unfolding Techniques  
E. A. Straker, C. E. Burgart, T. A. Love, R. M. Freestone, Jr.

ORNL-TR-2370

Safety Aspects in the Design of the WAK  
F. Herre, K. P. Schulze, G. Muszynski, A. Patzelt  
(Translated from Atomwirt, Atomtech.; 15; 79-83 (1970))  
Avail.: Dep.; NTIS

ORNL-TR-2306

Civil Defense  
N. I. Akimov (ed.)  
(Translated from Grazhdanskaya Oborona. Moscow; Kolos (1969).))  
Avail.: Dep.; NTIS

ORNL-TR-2470 (UJV-2390-R,T In Czech)

October 1970

Radiation Effects on Mechanical Properties of Concrete  
B. Stoces, P. Otopal, V. Juricka, J. Gabriel

PB-197566

October 1970

Conference on Transportation of Radioactive Material Held in  
Charlottesville, Virginia on 26-27, October 1970  
Dept. of Conferences and Institutes, Virginia University,  
Charlottesville, Va.  
Avail.: NTIS

RD/B/N-1863

December 1970

Methods of Gamma Ray Spectrometry Applicable to Shielding Measure-  
ments  
A. J. Fraser  
Avail.: Dep.; NTIS (U.S. Sales only)

RLO-1388-135

1971

Breit-Wigners Viewed Through Gaussians  
D. H. Wilkinson  
Avail.: Dep.; NTIS

RT/FI-(70)15

March 16, 1970

Comparison Between the  $S_n$  and Characteristics Methods for Fast  
Reactor Evaluation

I. Galligani, G. Sena

Avail. Dep.; NTIS (U.S. Sales only)

TRG-Report-2118

December 1970

Neutron Spectra for Run 59/1 of the Dounreay Fast Reactor

D. S. Crowe

Avail.: Dep.; NTIS (U.S. Sales only)

UCRL-20148 (Thesis)

March 1971

Development of Neutron Leakage Spectrometers with Emphasis on the  
keV Range

Rudolph J. Henninger

Avail.: Dep.; NTIS

WARD-4181-1

March 1971

Evaluation of  $^{238}\text{U}$  Neutron Cross Sections for the ENDF/B Version II  
File

T. A. Pitterle

Avail.: Dep.; NTIS

WARD-4181-2

February 1971

Status Report on Evaluation of Sodium Cross Sections for ENDF/B

N. C. Paik, T. A. Pitterle

Avail.: Dep.; NTIS

WHAN-FR-13

February 1971

Analysis of ZPPR/FTR Shield Experiments: Gamma Distribution

E. T. Boulette, W. L. Bunch

Avail.: Dep.; NTIS

Health Phys., 19, 757-767 (Dec. 1970)

Estimation of Gonadal Absorbed Dose Due to Environmental Gamma Radia-  
tion

B. G. Bennett

Indian J. Pure Appl. Phys., 8(10), 670-1 (Oct. 1970)

Pair Cross-Sections of Gamma Rays

J. R. Rao, M. S. Murty, K. Premchand, K. Parthasaradhi

Nucl. Appl. Technol., 9(6), 875-878 (Dec. 1970)

A  $^{244}\text{Cm}$ -Be Isotopic Source

D. C. Stewart, E. P. Horwitz, C. H. Youngquist, M. A. Wahlgren

*Nucl. Instr. Methods*, 74, 224-228 (1969)

Response of 25 cm<sup>3</sup> Ge(Li) Detector to Neutrons - Shielding Factors  
J. L. Rodda, Jr., R. L. Macklin, J. H. Gibbons

*Nucl. Technology*, 10(3), 325-327 (March 1971)

Bremsstrahlung Shielding from Electron Trapping in Dielectrics  
D. L. Hollis

*Nucl. Sci. Eng.*, 42(1), 97-100 (Oct. 1971)

Calculations of Neutron Time-Energy Distributions in Heavy Moderators  
T. J. Williamson, R. W. Albrecht

*Nucl. Sci. Eng.*, 43(1), 32-41 (January 1971)

Gamma-Ray Attenuation at Energies of Approximately 6 and 8 MeV  
W. R. Johnson, D. H. Risher, J. E. Rogers, W. L. Thompson

*Nucl. Sci. Eng.*, 43(1), 105-106 (Jan. 1971)

Monte Carlo Calculation of the Thermal Neutron Activation in Light-Water-Moderated Uranium Cells Using ENDF/B Cross-Section Data  
J. J. Volpe, W. Baer

*Nucl. Sci. Eng.*, 43(1), 108-114 (January 1971)

Reduction of the Ray Effect in Discrete Ordinates Calculations  
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