RSIC Newsletter

No. 42   May, 1968

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*The more extensive a man's knowledge of what has been done,
the greater will be his power of knowing what to do... Disraeli*

WEAPONS RADIATION SHIELDING HANDBOOK QUESTIONNAIRE

RSIC has now distributed 3 chapters of the Weapons Radiation Shielding
Handbook. We would like an indication as to the desirability of continuing
to issue subsequent chapters as they become available and an evaluation of
their worth to the shielding community. A questionnaire in this regard is
appended at the end of this newsletter. If you have received these chapters,
we would greatly appreciate your taking the time to fill it out and mail it
to us, anonymously if you wish. Additional comments are also invited.

It is anticipated that the results of the questionnaire will affect
future decisions regarding the preparation and distribution of similar docu-
ments.

FOR CCC-17/05R USERS

An edit routine for an 05R Collision Tape, compatible with FORTRAN-63
and FORTRAN-IV, is now available. Also added to the code package are edit
routines for the 05R Cross Section tapes of the type generated by Code 6,
Code 7, and Code 8 on either the CDC-1604 or the IBM 360/75.

AMC CODE PACKAGE UPDATE

The AMC Code, CCC-90, has been updated. The epicadmium and the fast-
neutron albedo data, formerly supplied in the form of binary files, has been
converted to BCD format. The AMC Code has been modified to read these BCD
data. The master tape now contains 8 files of information, the first and
second files containing the epicadmium data and the fast-neutron data, res-
pectively.

CORRECTIONS TO CODE PACKAGE

Changes to CCC-98/FASTER code package have been received from
T. M. Jordan which include corrections and changes required for IBM
360/65 compatibility. Users of the program may secure a statement of
the changes from the RSIC Codes Coordinator upon request.

CCC-48/QAD DOCUMENTATION UPDATE

Dr. J. Robert Streetman of the N Division, LASL, has added a
Supplement to LA-3573 report which describes QAD V, the Program for
Calculation of Volume Heating. This code, involving two-dimensional
kernel integration, is already a part of the CCC-48 code package. The
new Supplement is available from RSIC on request and from normal docu-
ment distribution centers. It is listed as LA-3573 Supplement. It
will obsolete the informal documentation previously distributed.

PERSONAL ITEMS

We incorrectly noted in March that Charles (Chuck) Garrett is now
at Fort Worth. He is with Radiation Research Associates, as we mentioned,
but is Project Manager, Information Systems Group, Bethesda, Maryland.
Sorry, Chuck.

G. W. (Gene) Ray has left Aerospace and is now Chief, Strategic
Studies Group, Operations Analysis Office, Headquarters, U.S. Air Force.

James Baran has finished his doctoral work at KSU and is now at Los
Alamos.

LETTER TO THE EDITOR

Dear Codes Coordinator:

In your published distribution of abstracts, ORNL-RSIC-13, you asked
that errors, omissions, etc. be called to your attention. In view of this
I would like to remind you that the term "code package" has been used in
Argonne Code Center publications dating back to 1960 to describe the collec-
tion of materials included in your description. While I heartily endorse
your use of the term (usage breeds acceptance),I do question its "coining"
by RSIC.

(Mrs.)Margaret Butler
Applied Mathematics Div.
Argonne National Laboratory

RSIC Reply:

Webster's definition of to "coin" a word or phrase is: to make; fabricate; invent. Since RSIC neither made, fabricated, nor invented the term "code package", but rather used it in a special sense, we stand corrected. If the word "coined" is changed to the word "used" in the first sentence of the Preface it will be more nearly correct.

VISITORS TO RSIC

Visitors to RSIC during the month of April are: Charles Esienhauer, National Bureau of Standards, Washington, D. C.; A. B. Chilton, University of Illinois, Urbana, Illinois; Jimmy D. Matthews, Health Physicist, Ohio University, Athens, Ohio; Capt. Enz, DASA, Washington, D. C.; Terry W. Smith, Henry T. Smith, Ric Burn, Brown Engineering, Huntsville, Ala.; Janet Lacetera, Lt. Anthony Buhl, Edgewood Arsenal, Maryland.

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 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.

REACTOR AND WEAPONS SHIELDING

AD-647165 (DASA-1820-3)

   Time Dependent Neutron Transport from a Point Isotropic source at an Altitude of (15.240Km) 50,000 Ft.
   J. P. George, A. Lavagnino
   November 17, 1966

AD-662059 (SN-255, N68-15684)

A Method for Evaluation of Radiation Shielding Design
Final Report
M. A. Suarez
January 31, 1967

AECL-2793

Tables of Beta Dose Distributions
William G. Cross
November 1967

AERE-R-5086

Yields from Neutron Induced Fission
I. F. Croall
November (Reprinted January, 1968), 1965

AERE-R-5679

The Point Source Method of Dose Calculation in Media of Varying
Density with Special Reference to Beta Particles
W. J. Whitehouse
January, 1968

AFWL-TR-66-111

Summary of Neutron and Gamma Dosimetry Techniques
H. M. Murphy

EGG-1183-1334

Experimental Measurement of Fallout Protection Provided by Trans-
portation Vehicles
R. L. Summers
June 30, 1967

LA-3839

A Relativity Notebook for Monte Carlo Practice
C. J. Everett
February 13, 1968

LA-DC-8660 (CONF-670932-2)

Design and Performance of an Open-Well Shield for High-Power Pro-
pulsion Reactor Testing
Glen A. Graves
1967

NAA-SR-Memo-12586

A Design Study for Fast Flux Test Facility Secondary Gamma Shield
J. V. Facha, J. G. Roberts
December 20, 1967

NDL-TR-89-I

Neutron and Gamma Ray Production Cross Sections for Sodium, Magnesium, Chlorine, Potassium, and Calcium

Part I: General Information and Data Format, M. K. Drake, J. D. Garrison, et al.
Part II: Sodium, J. D. Garrison, M. K. Drake
Part III:Magnesium, M. K. Drake
Part IV: Chlorine, M. S. Allen, M. K. Drake
Part V: Potassium, M. K. Drake
Part VI: Calcium, M. K. Drake
November, 1967

NSJ-tr-93 (In English)

Analysis of Photoneutron Flux Distribution in Water-Shielded Re-actors
Translated from, Nippon Genshiryoku Gakkaishi, 8, 12-15
Japanese
Takashi Tagami, Mitsuyuki Kitazume
1966

ORNL-tr-1849, Translated from EUR-3472.d (German)

The Calculation of Place-Dependent Neutron Spectra in Water-Iron-Water Shielding Assemblies and the Relations of the Diffusion
R. Fiebig

USNCEL-TR-R565

Fast-Neutron Streaming Through Concrete Ducts
Y. T. Song
February, 1968

USNRDL-TR-68-3

Significance of Fallout Ingress into Shelters
H. Lacayo, Jr., M. A. Sullivan
October 19, 1967

Am. Ind. Hyg. Assoc. J., 29, 1, p.94-100 (1968)

Broad-Beam Gamma Attenuation in Thin Absorbers
E. B. Stewart, J. O. Ledbette

Applied Scientific Research, 16, 4, 280-287, (December, 1967)

Scattering of Directed Radiation by a Cylinder
N. R. Zitron, J. Davis

Atomkernenergie, 12: 409-14, (1967) (In German)

Measured Intensity Distributions of Neutrons and Gamma-Radiation of a Plane Parallel Beam and Relaxation Lengths as Functions of the Volume Percentage of the Metal Component in the Shield
G. Thuro, M. Heske, G. Richter, C. Schnier, I. Thuro

Atomkernenergie 13: 1-7, Jan-Feb, 1968

Semianalytical Methods for Neutron Transport Theory in Plane Geometry
D. Bünemann, et al.

Brit. J. Appl. Phys., Vol. 1, 137-47, February 1968

The Thermal-Neutron Milne Problem with Capture
M. J. Lancefield, et al.

Health Phys., 13, 1175-86, November 1967

Dose Distributions as a Function of LET and Measurements of QF around the BNL Medical Research Reactor
L. F. Phillips, E. D. Scalsky, R. J. Champagne

Health Phys. 14, (4), 331, 1968

On Buried-Source Model for Computing Fallout Ground Roughness Effects
R. L. French

Izy. Vyss. Uch. Zaved. Fiz., 5, 147-9, 1967 (In Russian)

On the Transition Effect Theory for Gamma Radiation
V. S. Galishev

J. of Nuclear Medicine, MIRD, Sup. No. 1, p. 7-14, February 1968
Phamphlet No. 1, Medical Internal Radiation Dose Committee

A Schema for Absorbed-Dose Calculations for Biologically-Distributed Radionuclides
Robert Loevinger, Mones Berman

J. of Nuclear Medicine, MIRD, Sup. No. 1, p. 15-25, February, 1968
Phamphlet No. 2

Energy Deposition in Water by Photons from a Point Isotropic Sources
Martin J. Berger

J. of Nuclear Medicine, MIRD, Sup. No. 1, p. 27-39, February, 1968
Phamphlet No. 3

Absorbed Fractions for Photon Dosimetry
G. L. Brownell, W. H. Ellett, A. R. Reddy

J. Nucl. Med. Symposium, 17, 1968

Energy Deposition in Water by Photons from Point Isotropic Sources
M. J. Berger

J. Phys. A. 1 (2), 256-, 1968

Photoelectric Cross Sections of Gamma Rays in Al, Cu, Sn, W, Au, and Pb in Energy Region 50-208, keV
K. Parthasa

Mater. Res. Std. 8, 3, p. 19-24, 1968

   Attenuation of X-Rays and Gamma Rays in Concrete
   B. E. Foster

Nippon Genshiryoku Gakkaishi 9, 597-603, 1967 (In Japanese)

   Gamma-Ray Leakage through a Slit in Lead Shield. I.
   Shun-ichi Miyasaka, Yoshihiko Kanemori, Yutaka Fukushima,
   Takeshi Yamada

Nucl. Instr. Methods 60, 1, p. 4-6, 1968

   Monte Carlo Calculation of Source-to-Detector Geometry, II
   I. R. Williams

Nucl. Eng. Design 6, 251-263, 1967

   A Method to Estimate the Water Content of Concrete Shields
   H. K. Hilsdorf

Nucl. Sci. Eng. 31, 3, 492-99, March 1968

   The Application of Track-Length Distribution Biasing in Monte Carlo
   Deep-Penetration Calculations
   R. H. Karcher, R. C. Erdmann, O. C. Baldonado

Nucl. Sci. Eng., 31, 3, 500-504, March, 1968

   The use of Self-Optimized Exponential Biasing in Obtaining Monte
   Carlo Estimates of Transmission Probabilities
   L. B. Levitt

Nucl. Sci. Eng. 32, 1, 62-75, April, 1968 (ORNL-TM-1867)

   A Method for the Calculation of Neutron-Capture Gamma-Ray Spectra
   K. J. Yost

Nucl. Sci. Eng. 32, 1, 76-81, April, 1968

   Mathematical Verification of a Certain Monte Carlo Sampling Technique
   and Applications of the Technique to Radiation Transport Problems.
   W. A. Coleman

Nucl. Sci. Eng. 32, 1, 120-130, April, 1968

   Biorthogonal Angular Polynomial Expansion of the Two-Dimensional
   Transport Equation
   K. D. Lathrop, N. S. Demuth

Nucleonik 10, p. 283-7, January 1968 (In German)

   Neutron Spectrum of Am-Be Source
   H. B. Greiss

Phys. Med. Biol., 13 (2), 219 , 1968

   An Assessment of Monte Carlo Calculations to Determine Gamma Ray
   Dose from Internal Emitters
   W. H. Ellett, G. L. Brownell, A. R. Reddy

Proc. Phys. Soc. London, 92, 618, 1967

   Photon Attenuation Cross Section of Uranium
   J. L. Perkin, A. C. Douglas

Rentgenol. Radiol., 5, 212-17, 1966 (In German)

   Application of Computers in the Determination of the Dose in Radio-
   Therapy
   J. Richter, P. Penchev

Soviet J. At. Energy, English Transl., 22, 5, 505, May 1967

   The Scattering of 0.511 MeV Gamma Rays by Shielding Barriers
   B. M. Skvortsov, V. V. Chernyakhovski, L. S. Sheiman, D. B. Pozdneev

Soviet J. At. Energy, English Transl. 22, 5, 507-508, May 1967

   The Spatial Distribution of Backscattered Gamma Radiation from Sources
   on the Surface of a Reflector
   N. F. Andrushin, B. P. Bulatov

Soviet J. At. Energy, English Transl, 22, 5, 522-523, May, 1967

   The Spatial Distribution of Scattered Gamma Radiation in a Cavity
   for a Collimated Primary Source
   N. F. Andrushin, B. P. Bulatov

BOOK

   Principles of Radiation Protection
   K. Z. Morgan, J. E. Turner (Editors)
   A Textbook of Health Physics
   New York, John Wiley and Sons, Inc. Publishers
   1967

BOOK

   The Chemistry and Physics of High Energy Reactions
   E. J. Henley, E. R. Johnson

BOOK

   Background, Shielding, and Collimation
   W. E. Kreger, R. L. Mather
   S. M. Shafroth, (Editor)
   New York, Gordon and Breach Science Publishers
   1967

BOOK

> USA Standard Glossary of Terms in Nuclear Science and Technology
> (USAS N1.1-1967)
> USA Standards Institute
> 10 E. 40th St.
> New York, New York   10016

THESIS

> Backscatter of Normally Incident Gamma Protons from Semi-Infinite
> Media of Varying Atomic Number
> Julian Jack Steyn
> Toronto, University of Toronto

COMPUTER CODES LITERATURE

Risö-M-663   December 1967   PRIGAM
                                                               SEGAM I and II
                                                               REMTHERM
                                                               MC4
                                                               REMDIFF

User's Manual for the AEK Shielding Programs P-18, 19, 20, 63, 220, 374
By Peter Kirkegaard
ALGOL for GIER - ALGOL for IBM 7094 - FORTRAN IV for IBM 7094

UJV 1753 (ORNL-tr-1844)   February 1967   NEFDORN

Computer Program for the Calculation of Neutron Fluxes, Dose Rates and
Heat Sources in the Shielding of a Nuclear Reactor
by J. Burian
ALGOL for GIER

UJV 1755 (ORNL-tr-1845)   February 1967   GAMRAT

Calculation of the Gamma Flux Dose Rate and Heat Source in the Shielding
of a Nuclear Reactor
by J. Rataj
ALGOL for GIER

LA-3573 Supplement   April 1968   QAD V

The Program QAD V for Calculation of Volume Heating
by J. R. Streetman
FORTRAN IV, IBM 7090, 7094

LMSC-5234   February 1968   AIRTRANS

Utilization Manual - Computer Program AIRTRANS (a time-energy dependent,
3-dimensional, Monte Carlo system in a variable density atmosphere;
manual written at Lockheed Missiles & Space Division.)
FORTRAN IV, UNIVAC 1108

AE-FFN-66   October 1967   MULTPOL

Finite-Geometry and Polarized Multiple-Scattering Corrections of Experi-
mental Fast-Neutron Polarization Data by means of Monte Carlo Methods
By O. Aspelund and B. Gustafsson
FORTRAN, IBM

A QUESTIONNAIRE ON THE WEAPONS RADIATION SHIELDING HANDBOOK

The following Chapters of the Weapons Radiation Shielding Handbook have been distributed by RSIC:

Chapter 3: Methods for Calculating Neutron and Gamma-Ray Attenuation
Chapter 4: Neutron and Gamma-Ray Albedos
Chapter 5: Methods for Calculating Effects of Ducts, Accessways, and Holes in Radiation Shields

Please indicate your feelings as to the value of each chapter by circling the appropriate descriptive words in the following list. Also feel free to add any additional comments.

1. Would you like to receive subsequent chapters and revisions?

      YES   NO   Undecided

2. In general, do you think the handbook will be useful to the shielding community?

      YES   NO   Undecided

3. What do you think of the coverage?

Chapter 3:	Excellent	good	fair	poor	undecided
Chapter 4:	"	"	"	"	"
Chapter 5:	"	"	"	"	"

4. What is your opinion in regard to clarity and manner of presentation?

Chapter 3:	Excellent	good	fair	poor	undecided
Chapter 4:	"	"	"	"	"
Chapter 5:	"	"	"	"	"

5. Have you actually used the material presented either for specific or general information?

Chapter 3:	YES	NO
Chapter 4:	"	"
Chapter 5:	"	"

6. Have you placed the Chapters on your reference shelf for future use?

Chapter 3:	YES	NO
Chapter 4:	"	"
Chapter 5:	"	"

Please mail this completed questionnaire to:

Radiation Shielding Information Center
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830