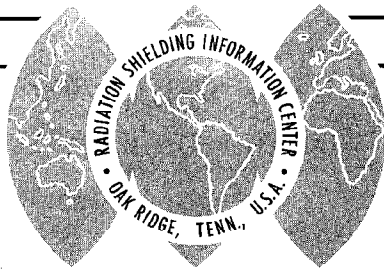


RSIC Newsletter



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. 13

December 14, 1965

DO YOU WISH FICHE?

RSIC is initiating an experimental program of disseminating microfiche (sometimes called micronegatives) to persons requesting copies of documents in the literature store. The Center's own reports and those of Oak Ridge National Laboratory will still be sent in full size form. For those persons who are willing to accept the microfiche, this service will probably be one of the fastest means of obtaining information which may be vital to their research.

LIST OF REPORTS ISSUED BY RSIC

The following reports have been issued by RSIC and are available upon request:

- ORNL-RSIC-1 - (Superseded by ORNL-RSIC-5)
- ORNL-RSIC-2 - (Superseded by ORNL-RSIC-5)
- ORNL-RSIC-3 - A Comparison of First- and Last-Flight Expectation Values Used in an O5R Monte Carlo Calculation of Neutron Distributions in Water - by D. K. Trubey and M. B. Emmett (May 1965)
- ORNL-RSIC-4 - Some Calculations of the Fast-Neutron Distribution in Ordinary Concrete from Point and Plane Isotropic Fission Sources - by D. K. Trubey and M. B. Emmett (June 1965)
- ORNL-RSIC-5 - Bibliography, Subject Index, and Author Index of the Literature Examined by the Radiation Shielding Information Center (December 1964)
- ORNL-RSIC-6 (Vol. 1) - Abstracts of the Literature Examined by the Radiation Shielding Information Center
- ORNL-RSIC-7 - Tabulated Values of Scattered Gamma-Ray Fluxes in Iron Interpolated from Moments-Method Calculations - by D. K. Trubey (May 1965)
- ORNL-RSIC-8 - Survey of Methods for Calculating Gamma-Ray Heating - by H. C. Claiborne (June 1965)
- ORNL-RSIC-9 - A Comparison of Three Methods Used to Calculate Gamma-Ray Transport in Iron - by D. K. Trubey, S. K. Penny, and K. D. Lathrop (October 1965).

RECENT VISITORS TO RSIC

The following people visited RSIC during the month of November: Martin A. Broders, Y-12 Plant, Oak Ridge; Nancy F. Cross, NSIC, Oak Ridge; Charles Eisenhauer, National Bureau of Standards, Maryland; Y. Song, USNCEL, California; W. H. Wimmers, North Holland Publishing Company, The Netherlands; Dr. H. Eisenlohr, IAEA, Austria; M. E. Senko, IBM Research, New York; A. W. Reetz and Warren Keller, NASA Headquarters, Washington; C. W. Hill, Lockheed-Georgia Company, Georgia; Maynard Pearson, S. B. Layno, and Maurice Wilkinson, The Boeing Company, Seattle, Washington.

TRAVELING WITH RSIC

Mrs. Henrietta Hendrickson, Mrs. Betty F. Maskewitz, and Mr. S. K. Penny of the RSIC staff recently visited at the General Dynamics, Forth Worth, Texas, installation, consulting with members of the Nuclear Shielding Research Group and the Digital Computing Laboratory.

Following a general briefing on nuclear shielding research efforts in their facility by E. C. Kidd and E. E. Jones, Mrs. Hendrickson, Mrs. Maskewitz and Mr. Arnold Futterer of the U. S. Army Nuclear Defense Laboratory, Edgewood Arsenal, Maryland, participated in a seminar-workshop on the GD/FW SPARC-COMBINE codes conducted by E. E. Jones and B. E. Morris of the Nuclear Shielding Research Group and J. L. Hunter of the Digital Computing Laboratory. The SPARC-COMBINE codes (referenced in the report collection of this issue of the newsletter) have been contributed to the RSIC computer code collection and are now in the RSIC routine processing procedure.

Some of the other persons contacted were Roy Henry, Dick Miller, Mac McCauley, Bob Beissner, Fred Leopard, Talley Western, D. A. Huckaby, and C. W. Austin.

S. K. Penny also visited Radiation Research Associates in Fort Worth, Texas, where he talked with Mike Wells and Bob French.

The visit to the National Bureau of Standards was enhanced by the beauty of the new site at Gaithersburg. S. K. Penny discussed the shielding effort at NBS with Lew Spencer, Martin Berger, Charles Eisenhauer, John Hubbell, and Ed Morris. Ed Brady's Office of Standard Reference Data was also contacted.

The shielding effort at the Union Carbide Research Institute at Tarrytown, New York, was explained to S. K. Penny by Clay Zerby and Joe Agresta.

ORNL NEUTRON PHYSICS DIVISION ANNUAL REPORT PUBLISHED

Normally the information contained in progress reports is not processed for the RSIC system since most of the information is preliminary and incomplete. The newsletter, however, might be a good medium to disseminate information concerning progress reports since the material can be distributed with only a small delay. Our first announcement of titles will be those concerned with shielding which appeared in the newly released ORNL Neutron Physics Division Annual Progress Report for Period Ending Aug. 1, 1965, ORNL-3858 (Nov. 1965). This report is issued in two volumes with Vol. 1 containing reactor and weapons shielding articles and Vol. 2 containing high energy research articles. All of the articles are either summaries or abstracts of full reports issued separately.

We ask coordinators and other readers to notify us of progress reports which we should publicize in this manner.

The following is a partial list of the titles in ORNL-3858:

REACTOR SHIELDING -

- Measurement of the Thermal-Neutron Flux down a Rectangular Concrete Duct -
F. J. Muckenthaler, J. J. Manning, J. L. Hull, K. M. Henry, L. B. Holland, and D. R. Ward
- Measurement of the Fast-Neutron Dose Rate down a Rectangular Concrete Duct -
F. J. Muckenthaler, K. M. Henry, J. J. Manning, J. L. Hull, L. B. Holland, and D. R. Ward
- Monte Carlo Calculation of the Fast-Neutron Dose Rate Along the Center Line of a Straight Rectangular Duct Using the Albedo Concept, and Comparison with Experiment - R. E. Maerker
- A Monte Carlo Determination of Intermediate-Energy Differential Neutron Albedos for Concrete - W. A. Coleman and R. E. Maerker
- Monte Carlo Determination of the Differential Thermal-Neutron Angular Albedos and Capture-Gamma Dose Rates for Concrete Arising from the Slowing Down of Incident Intermediate-Energy Neutrons - R. E. Maerker
- Investigation of the Accuracy of the Monte Carlo Method for Calculating Differential Angular Thermal-Neutron Albedos and Thermal-Neutron Captures for a Weakly Absorbing Medium Such as Concrete - R. E. Maerker
- Single-Velocity Calculation and Measurement of Differential Angular Thermal-Neutron Albedos for Concrete - R. E. Maerker and F. J. Muckenthaler
- Calculation and Measurement of the Fast-Neutron Differential Dose Albedo for Concrete - R. E. Maerker and F. J. Muckenthaler
- A Calculation of the Neutron Dose in Ordinary Concrete Due to Air-Scattered Neutrons from a Point Fission Source - D. K. Trubey
- Measured Neutron Source Spectra for Angular Scattering Experiments with Small Cylinders - J. C. Courtney and V. V. Verbinski
- Fast-Neutron Scattering from Small Cylinders of Steel, Aluminum, Graphite, Concrete, and Lithium Hydride - V. V. Verbinski and J. C. Courtney
- Measurement of the Neutron-Source Distribution in a Pool-Type Research Reactor - M. S. Bokhari and V. V. Verbinski
- Measurements and Calculations of Spectral and Spatial Details of Fast-Neutron Flux in Water Shields - V. V. Verbinski, M. S. Bokhari, and J. C. Courtney
- Propagation of Neutron Waves Through Heterogeneous Multiplying and Non-multiplying Media - V. R. Cain
- Differential Dose Albedos for Calculation of Gamma-Ray Reflection from Concrete - M. B. Wells
- Neutron and Gamma Radiation Penetration into Concrete-Shielded Underground Structures - R. L. French, M. B. Wells, and N. M. Schaeffer
- Structural and Shielding Considerations in the Design of Hardened Facilities - R. H. Karcher and J. H. Wilson
- Penetration of Neutron and Gamma Radiation through the Openings of Underground Structures - R. L. French, M. B. Wells, and N. M. Schaeffer
- Gamma-Ray Spectrum Emitted by a Stainless-Steel-Clad Reactor (BSR-II) - G. T. Chapman and W. R. Burrus
- SNAP Reactor Installation at the Tower Shielding Facility - C. E. Clifford, F. J. Muckenthaler, and J. Lewin
- Calculations for the Scattering of Neutrons by Air, Ground, and Structures for SNAP Shielding Experiments - F. B. K. Kam

Secondary Gamma-Ray Problem in Man-Rated Shields - F. B. K. Kam and E. Whitesides
Monte Carlo Calculations of Neutron Penetration Through Shaped SNAP Shields -

F. B. K. Kam

Slowing-Down Spectra of Neutrons in Lithium Hydride - V. V. Verbinski
Angular Distributions of Low-Energy Neutrons Leaking from Various Scattering
Materials - V. V. Verbinski

THEORETICAL STUDIES OF HIGH-ENERGY RADIATION SHIELDING

The Nucleon-Meson Cascade Initiated by 200-GeV Protons - R. G. Alsmiller, Jr.
and J. Barish

Calculation of the Nucleon-Meson Cascade in Iron Initiated by 1- and 3-GeV
Protons and Comparison with Experiment - R. G. Alsmiller, Jr. and J. Barish

Calculation of the Nuclear Cascade in Steel Initiated by 10- and 19.2 GeV/c
Protons and Comparison with Experiment - R. G. Alsmiller, Jr. and J. Barish

Secondary-Particle Contribution to the Dose from Solar-Flare Protons Incident
Isotropically on Slab Shields - D. C. Irving, R. G. Alsmiller, Jr., F. S.
Alsmiller, H. S. Moran, and J. Barish

Nucleon-Nucleus and Pion-Nucleus Collisions in the Energy Range 2 to 10 GeV -
R. G. Alsmiller, Jr., and J. Barish

Effect of Charged-Particle Slowing Down on the Nuclear Cascade in Steel Initiated
by 19.2-GeV/c Protons - F. S. Alsmiller, R. G. Alsmiller, Jr., and J. Barish

Electron-Photon Cascade Calculations and Neutron Yields from Electrons in Thick
Targets - R. G. Alsmiller, Jr. and H. S. Moran

Implementation of Swiss Intranuclear-Cascade Program and Comparison of Results
with Those of the Bertini Program - M. Leimdorfer, R. G. Alsmiller, Jr.,
H. W. Bertini, O. W. Hermann, and H. E. Francis

Calculation of Radiation Hazards Due to Exposure of Supersonic Jet Aircraft to
Solar Flares - M. Leimdorfer, R. G. Alsmiller, Jr., and R. T. Boughner

Theoretical Study of Moon Analysis by Neutron Activation and Gamma-Ray Spectroscopy
- M. Leimdorfer and R. T. Boughner

Tissue Current-to-Dose Conversion Factors for Neutrons with Energies from 0
to 60 MeV - D. C. Irving, R. G. Alsmiller, Jr. and H. S. Moran

Calculated Fluxes of Less than 50-MeV Neutrons Diffusing Beneath the Shield of
a Meson Production Facility - W. E. Kinney

Calculated Tissue Current-to-Dose Conversion Factors for Nucleons Below 400 MeV
- C. D. Zerby and W. E. Kinney

Intranuclear-Cascade Calculation for Incident Particles with Energies from 25 MeV
to 2 GeV - H. W. Bertini

Angular Momentum Calculation from Intranuclear Cascades - H. W. Bertini

Literature Survey of Radiochemical Cross-Section Data Below 425 MeV and Com-
parison with Intranuclear-Cascade Calculations - H. W. Bertini

Status of Production Output from the Low-Energy Intranuclear-Cascade Calculation
- H. W. Bertini

Instructions for the Operation of Codes Associated with the Low-Energy Intranuclear-
Cascade Calculation - H. W. Bertini, H. E. Francis, and M. P. Guthrie

Effect of Error on Results of a Low-Energy Intranuclear-Cascade Calculation -
H. W. Bertini

EXPERIMENTAL STUDIES FOR HIGH-ENERGY RADIATION SHIELDING

Preliminary Analysis of 0- to 15-MeV Neutron Yields Due to Proton Bombardment
of Thin Targets of Various Materials - W. R. Burrus, C. Schneeberger, and
B. Rust

Secondary Gamma Rays from Proton Bombardment of ${}^7\text{Li}$, Be, ${}^{11}\text{B}$, C, O, Mg, Al, and
Fe - G. T. Chapman, F. C. Maienschein, J. H. Todd, and W. Zobel

- Differential Cross Sections for the Production of Protons in the Reactions of 160-Mev Protons on Complex Nuclei - R. W. Peelle, T. A. Love, N. W. Hill, and R. T. Santoro
- Study of the Mass and Energy Spectrum of Charged Particles Produced by Bombardment of Targets by 60-Mev Protons - F. E. Bertrand, T. A. Love, R. W. Peelle, N. W. Hill, P. M. Aebersold, and W. R. Burrus
- Geometric Resolution in Time-of-Flight Neutron Spectroscopy - R. T. Santoro
- Neutron and Proton Spectra from Target Bombardment by 450-Mev Protons - J. W. Wachter, W. R. Burrus, and W. A. Gibson
- Differential Neutron Cross Sections for Several Materials Bombarded by 14-, 18-, and 56-Mev Protons - M. Young, V. V. Verbinski, W. R. Burrus, and J. C. Courtney

NOVEMBER ACCESSION LIST OF LITERATURE

The following accession list consists of literature which the RSIC obtained through its usual scanning procedures. This literature will be examined for assignment to various files or for possible rejection. The accession list is divided into three fields of (1) reactor and weapons shielding, (2) space and accelerator shielding, and (3) shielding computer codes.

RSIC is not a documentation center. The literature selected by RSIC may be obtained in general elsewhere. However, one may now ask for microfiche.

Reactor and Weapons Shielding

AHSB(RP)-M-35

Comparative Review of the Principal Non-Statutory United Kingdom Codes of Practice for Protection Against Ionizing Radiations and Radioactive Materials

E. J. Bennellick - July 1965

EUR-2488.e

A Numerical Solution of the Gamma Transport Equation Applied to Concrete Slabs

H. Penkuhn

DC-60-12-148

Analysis of OTT Configuration 43A Using the 2 Component Method

L. L. Lepesto and H. J. Tushav - 1960

NAA-SR-TDR-8181

Application of the Method of Steepest Descent to Laminated Shield Weight Optimization

R. L. Bernick

BOOK

Translation of Thomas Jaeger's Principles of Radiation Protection Engineering
Lawrence Dresner - September 1965

McGraw-Hill Publishers

BNWL-135 (C)

Analysis of the N Reactor Primary Shields
J. Greenborg and M. J. Berry - September 1965

IEA-85 (Translation requested)

Calculation of the Neutron Flux Distribution in the EBWR Core Shielded
by Water, Iron and Concrete
Wilma Sonia Hehl - December 1964

JAERI-1073

Low-Energy Gamma-Ray Spectra Following Resonance Neutron Captures.
Measurement by an NaI Scintillation Spectrometer
Yuki Kawarasaki - October 1964

NIJS-R-437

Experimental Verification of a Removal Age-Diffusion Multigroup Program
in a Thermal Column
F. Zerdin and V. Dimic - September 1964

BNL-9355

Activity Report on Brookhaven Work on the Compilation, Storage and Evaluation
of Nuclear Cross Section Data
Jack Chernick - May 1965

SC-DC-65-1544

Energy Transfer by Neutrons to Certain Materials
W. H. Buckalew - June 1965

Soviet J. Atomic Energy (English Translation), 17(1), 722-735 (July 1964)

Space-Energy Distribution of Neutrons in a Homogeneous Moderator
D. A. Kozhevnikov

Soviet J. Atomic Energy (English Translation), 17(2), 821-827 (August 1964)

Propagation of Neutrons in Uranium Carbide
I. I. Bondarenko, V. I. Golubev, A. V. Zvonarev, et al.

Soviet J. Atomic Energy (English Translation), 17(1), 760-762 (July 1964)

Attenuation of the Flux of Fission Neutrons in Iron-Water Mixtures
V. P. Mashkovich, A. N. Nikolaev, B. I. Sinitsyn and S. G. Tsypin

Soviet J. Atomic Energy (English Translation), 17(1), 757-760 (July 1964)

Investigation of the Space-Energy Distributions of Neutrons from the Br-5
Reactor in an Iron-Ore Medium
V. K. Daruga, I. I. Lazutkin, A. N. Nikolaev, D. M. Pinkhasik, et al.

Soviet J. Atomic Energy (English Translation), 17(1), 754-757 (July 1964)

Passage of Neutrons through Carbon and Through an Iron-Carbon Mixture
V. K. Daruga, I. I. Lazutkin, A. N. Nikolaev, et al.

Soviet J. Atomic Energy (English Translation), 17(2), 855-856 (August 1964)

Investigation of Fast-Neutron Penetration Through Sodium
V. K. Daruga, A. N. Nikolaev, D. S. Pinkhasik, et al.

J. Nucl. Sci. Tech., 2(6), 229-235 (June 1965)

An Approximate Calculation Method of Flux for Spherical and Cylindrical
Sources with a Slab Shield
H. Ono and A. Tsuruo

J. Nucl. Sci. Tech., 2(7), 261-269 (July 1965)

Unscattered Flux from Spherical and Cylindrical Sources with Shell-Shaped
Shields
A. Tsuruo

AE-197

Measured and Predicted Variations in Fast Neutron Spectrum in Massive Shields
of Water and Concrete
E. Aalto, R. Fraki, and R. Sandlin - September 1965

AE-198

Measured and Predicted Neutron Fluxes in, and Leakage Through, a Configura-
tion of Perforated Fe Plates in D₂O
E. Aalto - October 1965

USNRDL-TR-906

A Semi-Empirical Determination of Dose Rates within an Aircraft Carrier
Enveloped by a Cloud of Co-60
W. G. Miller - September 15, 1965

KFK-305

Neutron Spectra Measurements in Hydrogeneous Moderators
J. Kallfelz and W. Reichardt - May 1965

IDO-17115

Limited-Energy Neutron Sources Produced by the Decay of Excited Nuclei
E. A. King - September 1965

DISSERTATION

The Lattice Model Concept of Stochastic Neutron Transport
H. E. Hungerford (Purdue University, Nuclear Engineering Department)

AD-613546 (AFOSR-3147)

Research in Gamma-Ray Scattering, Absorption, and Electron Polarization.
Final Report - July 1962

AD-613468 (RM-4495-PR)

Dynamic Programming and an Inverse Problem in Neutron Transport Theory
R. E. Bellman, H. H. Kagiwada, and R. E. Kalaba - March 1965

AED-C-01-10

Radiation Shielding, Part V. Series C.
Bibliography issued by the Atomic Energy Information Service, Stuttgart

AD-614250 (FZK-201, WL-TR-64-151)

Formulation of Radiation Transport Solutions for Shielding Applications,
Including Integral Transform Methods, Matrix Techniques, and Asymptotic
Approximations - Technical Report, October 1, 1963 - September 30, 1964
J. M. Norwood and R. E. Beissner - March 1965

UCRL-12376

Photoneutron Cross Sections of ^6Li
B. L. Berman, R. L. Bramblett, J. T. Caldwell, et al. - September 15, 1965

NAA-SR-9400, Vol. II

Lithium Hydride Technology. II. Fabrication of Shadow Shields for SNAP
Applications
F. H. Welch - September 30, 1965

BRL-MR-1663

The Shielding Properties of Simple Enclosure Shields
C. M. Cialella and N. D. King - June 1965

ANL-7061

A General Theory of First-Passage Distributions in Transport and Multi-
plicative Processes
J. E. Moyal - June 1965

WT-1225

Gamma Radiation Field Above Fallout Contaminated Ground
R. L. Mather, R. F. Johnson, F. M. Tomnovec, and C. S. Cook - October 1959

PB-121784R

Radiological Health Handbook
Division of Radiological Health - September 1960

POR-2220

Shielding Effectiveness of Compartmented Structures in a Fallout Field
B. W. Shumway, S. Tomoeda, and A. L. Frank - April 29, 1963

BNL-9499

LINAC Shielding
W. H. Moore - August 17, 1965

AFWL-TR-65-141

An Annotated Bibliography of Protective Structures Research
R. A. Gurner - September 1965

RCN-37

Review of Activation Methods for the Determination of Fast Neutron Spectra
W. L. Zijp - May 1965

USNRDL-TR-888

Gamma-Emission Data for the Calculation of Exposure Rates from Nuclear Debris
Volume II. Induced Activities
G. R. Crocker, D. T. Wong - August 13, 1965

LA-DC-7320

Moments Equations and Equivalent Discrete Ordinates Equations. Part I.
Generalized Moments Equations
B. G. Carlson and K. D. Lathrop - 1964

ORNL-P-1545

Collimators for Low-Energy Gamma Rays
C. C. Harris - 1964

CEA-R-2804

Monte Carlo Method for Studying the Slowing Down of Neutrons in a Thin
Plate of Hydrogenated Matter
P. Ribon and A. Michaudon - June 1965

BNWL-IR-3

Description of Invention. Uranium Dioxide-Lead Radiation Shielding
A. E. Albrethsen - August 4, 1965

UCRL-14332

Gamma Dose Curves from Neutron-Activated Soil and Seawater Compared with
Fission-Product Decay
Richard M. Lessler and Frank W. Guy - August 1965

Health Physics, 11(11), 1145 (November 1965)

An Image Source Technique for Calculating Reflection of Gamma Rays or Neutrons
C. Eisenhauer

TID-21940

Photoneutron Production Cross Sections for Light Nuclei - Final Report
W. D. Whitehead - January 15, 1965

Brit. J. Rad., 38(453), 653-60 (September 1965)

Spectra of the Multiple-scattered Radiation in a Medium Irradiated with
Cobalt-60 Gamma Rays
R. M. Derbowka and D. V. Cormack

Nukleonik, 7(7), 421-26 (1965)

Measured and Predicted Variations in Fast Neutron Spectrum when Penetrating Laminated Fe-D₂O
E. Aalto, R. Sandlin and R. Fraki

Shielding Computer Codes

FZK-200-5A	June 1965	SPARC (P09)
Radiological Armor Program Methods and Data Compilation, Volume 5A. Computer Procedures: Slab Penetration and Reflection Calculation (SPARC, P09) by J. R. Stokes and J. L. Hunter FAP, IBM 7090		
FZK-200-5A SUPP	June 1965	SPARC (P09)
Radiological Armor Program Methods and Data Compilation, Volume 5A. Computer Procedures: Slab Penetration and Reflection Calculation (SPARC, P09) - Programmers Manual Supplement by J. L. Hunter for IBM 7090		
FZK-234	June 1965	SPARC (E59)
Computer Procedure: Slab Penetration and Reflection Calculation by J. R. Stokes and J. L. Hunter FORTRAN II for IBM 7090 and 7094		
FZK-34 SUPP	June 1965	SPARC (E59)
Computer Procedure: Slab Penetration and Reflection Calculation (SPARC, E59) -- Programmers Manual Supplement by J. L. Hunter FORTRAN II for IBM 7090		
FZK-235	June 1965	COMBINE (E91)
Computer Procedure: Combine Transmission Calculation by R. E. Falkenbury, J. L. Hunter, and J. R. Stokes FORTRAN II for IBM 7090		
FZK-235 SUPP	June 1965	COMBINE (E91)
Computer Procedure: Combine Transmission Calculation -- Programmers Manual Supplement by J. L. Hunter FORTRAN II for IBM 7090		
FZK-200-5B	June 1965	COMBINE (E20)
Radiological Armor Program Methods and Data Compilation, Volume 5B, Computer Procedures: Combine Transmission Calculation (E20) by R. F. Falkenbury, J. L. Hunter, and J. R. Stokes FORTRAN IV for IBM 7090		

FZK-200-5B SUPP

June 1965

COMBINE (E20)

Radiological Armor Program Methods and Data Compilation, Volume 5B
Computer Procedures: Combine Transmission Calculation (E20) Programmers
Manual Supplement
by J. L. Hunter
FORTRAN IV for IBM 7090

FZK-200-5C

June 1965

COMBINE (F29)

Radiological Armor Program Methods and Data Compilation, Volume 5C.
Computer Procedures: Combine Reflection Calculation
by R. F. Falkenbury and J. L. Hunter
FORTRAN II for IBM 7090

FZK-200-5C SUPP

June 1965

COMBINE (F29)

Radiological Armor Program Methods and Data Compilation, Volume 5C.
Computer Procedures: Combine Reflection Calculation -- Programmers Manual
Supplement
by J. L. Hunter
FORTRAN II for IBM 7090

GA-6096

HEXSCAT
GASKET

Quarterly Progress Report for the Period Ending December 31, 1964
by J. R. Beyster, etc.

HW-SA-3769

October 20, 1964

ISØGEN

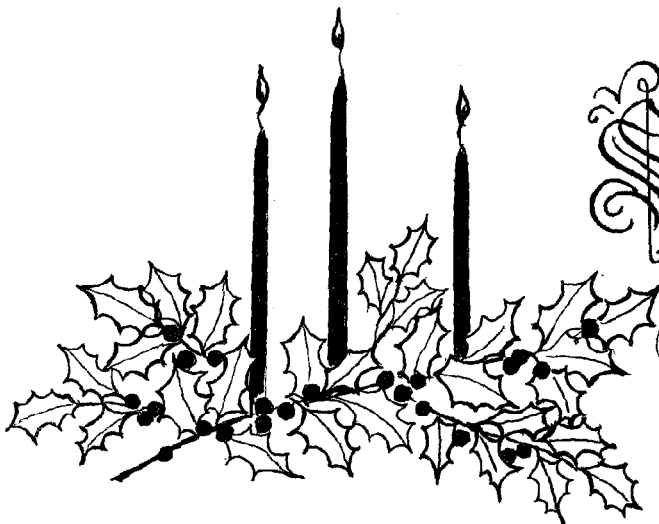
Radionuclide General Calculations
by H. H. Van Tuyl
FORTRAN for IBM 7090

NAA-SR-MEMO-10922
(Microfiche)

January 1965

SHØE

A Shield Weight Optimization Code
by R. L. Bernick



Season's Greetings

And best wishes for the coming year