RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

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

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No. 124 *March 1975*

I do not know what I may appear to the world; but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me. . . . Sir Isaac Newton

THE IMPORTANCE TO RSIC OF YOUR FEEDBACK

*To be effective, an information analysis center must have frequent and continuing communication with the individual research person in the scientific community it serves. We seek to give quick response to your requests, and they are many (~ 2800 last year). **We ask for your feedback** in a letter accompanying each code/data package we mail. We would like to be on **your direct distribution** for scientific papers published in proceedings of meetings, in journals, or as reports. Each of these kinds of information adds to our general background, aids in providing new evaluated information packages, and helps to make of RSIC a more viable technology resource for the entire radiation transport and shielding community.*

In the event you now have no specific information to contribute, we still want to hear from you. We are encouraged by your letters of appreciation and are often able to profit from your philosophic/practical comments. The former can be shown to line managers as a judgment on performance of specific staff members and/or to financial sponsors to show public acceptance of their programs. The latter helps us in planning to better meet your needs.

So send us your feedback! What are your problems? What kind of information do you need in solving your problems? What additional information should we include in our coverage? What do you do with the information you receive from RSIC? How can we improve the information/service we give to you?

SHIELDING ROLE IN A–E FIRMS DESCRIBED

George G. Biro, Gibbs and Hill, has published an article in **Consulting Engineer** on the role of shielding engineers in A–E firms. He points out how a well-functioning shielding team can contribute in the various stages of nuclear plant design to effect savings in design and construction costs, to the prevention of delays, and to ultimately minimize radiation exposure. A diagram clearly shows how shielding design is involved in many of the steps of the design critical path. The full reference is: George G. Biro, *A New Discipline: Design Against Radiation,* **Consulting Engineer** 43(6), 55–58 (Dec. 1974).

ANS-SPONSORED STANDARD APPROVED

Attention is called to the approval by ANSI's Board of Standard Review as an American National Standard the ANS-19.1, *Nuclear Data Sets for Reactor Design Calculations,* N4ll. R. A. Dannels, Westinghouse PWR Systems Division, is chairman of ANS-19.1.

PROCEEDINGS OF NEACRP MONTE CARLO MEET PUBLISHED

The *Proceedings of the NEACRP Meeting of a Monte Carlo Study Group* held at Argonne National Laboratory (ANL) on July 1–3, 1974 under the sponsorship of the Nuclear Energy Agency (NEA) Committee on Reactor Physics (CRP) has been published as an ANL-75-2 (NEA-CRP-L-118) report with a limited distribution. As one of a continuing series of NEACRP working meetings, this conference of Monte Carlo specialists was called to expedite the exchange of views and information. Opportunity was given for discussion, evaluation, and speculation and an edited version of these views is included in the publication.

Jacques Royen, NEACRP, Paris, France represented the sponsor in making the meeting possible. Official participants were: Ely Gelbard (ANL), Chairman, Edmond D. Cashwell (LASL), Robert C. Gast (W-BAPL), Malvin H. Kalos (NYU-Courant), Herbert Steinberg (MAGI), Robert R. Coveyou and G. Elliot Whitesides (UCC-ND ORNL) of the United States; from Europe: Richard C. Bending (CEGB,UK), Wolfgang Bernnat (IKE, Stuttgart, Germany), Horst A. Borgwaldt (INR, Karlsruhe, Germany), James M. Grimstone (AEEW, UK), J. Eduard Hoogenboom (IRI-Delft, Netherlands), John G. Moore (SRD-AEA, Warrington, UK), Rolando Simonini (CNEN/Bologna, Italy), and Antonio Taormina (EIFR-Wurenlingen, Switzerland). Other attendees were: Norman E. Banks (USA-BRL), William Chandler (LLL), Thomas J. Hoffman (UT), Lewis Milton (ANL), and Richard E. Prael (ANL).

THIRD IRPA CONFERENCE ANNOUNCED

The Third European Congress of the International Radiation Protection Association (IRPA) has been called for Amsterdam, The Netherlands, 13–16 May 1975. The congress is being organized by the *Nederlands Vereniging voor Stralingshygiene* (Netherlands Radiation Hygiene Association) and supported by the *Association Belge de Radioprotection*, the *Fachverband fur Strahlenschutz* and the *British Radiation Protection Association Ltd.* The working languages of the congress will be English, French and German. Simultaneous translation will be provided for sessions in the main congress hall. English will be the working language of concurrent sessions in other meeting rooms.

The central theme of the scientific programme is Criteria for Radiation Protection. The main topics are: (1) low dose effects and the effects of dose rate, especially with reference to the setting of protection standards; (2) relation between derived limits and population doses; (3) relative risks and cost-benefit evaluations; radiation and other risks to the population; risks from nuclear power production; risks from use of radioactive sources and radioisotopes in research, medicine and industry; and (4) technical innovations in particular to assess or reduce exposure of individuals and populations.

A scientific exhibition is planned in conjunction with the Congress. The exhibition will cover radiation protection instrumentation, protective clothing and shielding, new developments in dosimetry, handling equipment, etc. Those who are interested should contact: M. Boerma, Atoomforum, Scheveningseweg 112, Den Haag, The Netherlands.

The congress is open to all members of Societies affiliated with IRPA and also to others interested in the field of radiation protection. Information as to the outline of the program, enrollment fees and hotel accommodation will be given in separate announcements, to be sent to members of the affiliated societies. Additional information can be obtained from: Municipal Congress Bureau, 199, O.Z. Achterburgwal, Amsterdam-C., The Netherlands.

PERSONAL ITEMS

Ted Bohn, formerly with Martin Marietta Corp., Orlando, Florida is now with the Reactor Projects Group, Aerojet Nuclear Company, Idaho Falls, Idaho.

Thomas J. Hoffman, former member of the Huntsville, Alabama Science Applications Inc. (SAI), is now associated with the University of Tennessee, Knoxville. He is teaching and doing research in UT's Nuclear Engineering Department and is serving as a consultant to the Oak Ridge Union Carbide Nuclear Division (UCCND) Computer Science Division in the Nuclear Engineering Applications Department.

Correction: Instead of returning to Japan as stated in *RSIC Newsletter No. 123* **Koichi Okamoto** joined the Nuclear Data Section, International Atomic Energy Agency (IAEA), Vienna, Austria.

John P. Roberts has sent a change of address from Harry Diamond Laboratories to the U. S. Nuclear Regulatory Commission (NRC), Transportation Branch, Washington, D.C.

John L. Ridihalgh has left BMI-Columbus to start a new company, *Ridihalgh and Associates,* to consult on problems associated with transportation and handling of nuclear materials. The company address: 2112 Iuka Avenue, Columbus, Ohio.

Charles O. Slater has left General Atomic, San Diego to accept a position on the staff of the Oak Ridge National Laboratory. He will work on LMFBR and GCFR shielding in the Shielding Analysis and Reactor Physics Department of the Neutron Physics Division.

The following changes of address have been received in RSIC: **Marcel Barbier** from JRB Associates to Science Applications Inc. (SAI), McLean, Virginia; **Toshimasa Miura** from UC-Santa Barbara to the Tokai Branch, Ship Research Institute in Japan; and **James H. Ray** and **Jacob Celnik** from United Nuclear to Burns and Roe in Oradell, New Jersey.

CHANGES TO THE DNA WORKING CROSS SECTION LIBRARY

Corrections were made to the error files for nitrogen and oxygen. The updated versions are denoted DNA MAT 4133 MOD 7 nitrogen and DNA MAT 4134 MOD 4 oxygen. The changes are summarized below.

Nitrogen MAT 4133 MOD 7 **February 1975**

The file 33 covariance data have been changed to correct errors. Some LB = 3 data tables were inadvertently interchanged and are now given in the proper order.

Oxygen MAT 4134 MOD 4 **February 1975**

(Correction similar to that described for nitrogen).

CHANGES TO THE DATA LIBRARY COLLECTION

The DLC-23/CASK 22 neutron, 18 gamma-ray group library has been updated by the addition of data sets for Sn, Zr, and He-4. The Sn and Zr data were based on the Livermore evaluated data file and He-4 was based on ENDF/B-IV. A full 2400 ft reel of magnetic tape is required to obtain the library, which now contains data for 29 materials.

CHANGES TO THE COMPUTER CODE COLLECTION

CCC-79/ISOSHLD III

The package of this general purpose isotope shielding analysis kernel integration code was updated to correct an error in the RIBD Fast Fission Data Library called to RSIC attention by HEDL, Richland, Washington and Nuclear Safety Associates, Bethesda, Maryland. Current users may remove an extraneous set of cards (29–60) leaving the correct set (29–60) in the fast fission data set. Remove extraneous set (211S–237S) and leave the second set in the photon production data set. The cards removed were left in inadvertently when the data set was last updated.

CCC-203B/MORSE-CG

The general purpose Monte Carlo multigroup neutron and gamma-ray transport code (combinatorial geometry) system was updated to correct minor errors in subroutines PICTURE and EUCLID called to RSIC attention by ORNL and Ebasco Services, Inc. Requesters may ask for a statement of the 1/30/75 corrections or for the complete package. CCC-203B is operable on the CDC 6600.

CCC-250/EMERALD-NORMAL

Designed to calculate activity releases and potential doses from the normal operation of a pressurized water reactor plant, this program was contributed by Pacific Gas and Electric Company, San Francisco, California. Based to some extent on CCC-211/EMERALD, this program provides extensive new features, but does not obsolete the earlier model. Included is an expanded data library including isotopes of interest in liquid releases, a detailed model for a radiation waste-treatment system, and allows for the calculation of doses from liquid releases. FORTRAN IV; IBM 360/370.

CCC-251/FIPDIG

One-Dimensional Time-Dependent Fission Product Diffusion Code was contributed by Atomic Energy Research Establishment Winfrith, Dorchester, Dorset, England through the OECD Nuclear Energy Agency's Computer Programme Library (NEA CPL), Ispra, Italy. Reference: OECD DP Report 768. FORTRAN IV; IBM 360.

PSR-84/BOB 73

Gamma-ray spectrum analysis code for Ge(Li) detectors was contributed by Tokai Research Establishment, Japan Atomic Energy Research Institute (JAERI), Tokai-mura, Naka-gun, Ibaraki-ken, Japan. Reference: JAERI 1227. FORTRAN IV; FACOM 230-60.

PSR-85/NAISAP

Gamma-ray spectrum analysis code for NaI(Tl) detectors was contributed by Tokai Research Establishment, Japan Atomic Energy Research Institute (JAERI), Tokai-mura, Naka-gun, Ibaraki-ken, Japan. Reference: JAERI 1227. FORTRAN IV; FACOM 230-60.

PSR-86/GAMLEG-75

A new frozen version of the multigroup cross section generator for photon transport calculations was contributed by the Los Alamos Scientific Laboratory (LASL). RSIC formerly distributed GAMLEG in the CCC-42(A–E)/DTF-IV code packages, five different versions for compatibility with the DTF-IV versions packaged 1967–1970. The above package contains the LASL current exchange model. Included in the package is a routine, SUMMAT, contributed by the Imperial College of London, England which reads GAMLEG output and produces data in ANISN format. Reference for GAMLEG: LA-DC-7234. FORTRAN IV; CDC 6600/7600.

VISITORS TO RSIC

Visitors to RSIC during the month of February were: John J. Burgio and Raymond A. Shulstad, Air Force Weapons Laboratory, Kirtland AFB, New Mexico; Frank Rahn, Electric Power Research Institute, Palo Alto, California; Charles L. Peacock, Jr. and Felix P. Lalacona, NASA, Huntsville, Alabama; John Ridihalgh, Ridihalgh & Associates, Columbus, Ohio; Jack Courtney, Louisiana State University, Baton Rouge, Lousiana; R. M. Summers, Union Carbide Corporation–Nuclear Division, Oak Ridge, Tennessee; Richard Kramer, Gesellschaft fuer Strahlen-und Umweltforschung, Munich, Germany; and Douglas W. Muir, Los Alamos Scientific Laboratory, Los Alamos, New Mexico.

FEBRUARY ACCESSION OF LITERATURE

The following literature cited has been ordered for review, and that selected as suitable will be placed in the RSIC Information Storage and Retrieval Information System (SARIS). This early announcement is made as a service to the shielding community. **Copies of the literature are not distributed by RSIC.** They may 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 the literature entered into SARIS, and duplicate copies of out-of-print reports may be available on request. Naturally, we cannot fill requests for literature which is copyrighted (such as books or journal articles) or whose distribution is restricted.*

Special bibliographies and selected computer-printed abstracts of the literature in the RSIC system are available upon request. The Selective Dissemination of Information (SDI) Service is available by submitting a list of subject categories defining the recipient's interests.

THIS LITERATURE IS ON ORDER. IT IS NOT IN OUR SYSTEM. PLEASE ORDER FROM NTIS OR OTHER AVAILABLE SOURCE AS INDICATED.

REACTOR AND WEAPONS SHIELDING LITERATURE

AAEC/E-316
Statistical Distribution Functions for Product Ratios and Sums of Product Ratios.
Rose, E.K.; Cook, J.L.
September 1974
Dep., NTIS (U.S. Sales Only) $4.00

AD-774445; DS/PH-73-5; Thesis
Constraints Upon Group-to-Group Scatter Coefficients Used with Transport Calculations.
Webster, J.B.,III
December 1973
NTIS $10.50

AD-775128

Spatial Distribution of Dose Rate from a Point Isotropic Neutron Source in Air and at the Air-Ground Interface.

Degtyarev, S.F.; Kukhtevich, V.I.

1966

NTIS $4.00

AERE-R-7680

Assessment of Known Independent Yields and the Calculation of Those Unknown in the Fission of 232-Th, 233-U, 235-U, 238-U, 239-U, 239-Pu, 240-Pu and 241-Pu.

Crouch, E.A.C.

May 1974

Dep., NTIS (U.S. Sales Only)

ANU-P-599

Radiation and Man.

Titterton, E.Q.

July 1974

Dep., NTIS (U.S. Sales Only)

ARH-SA-176; CONF-740921-20

Aerial Gamma Survey by Helicopter to Measure Surficial Contamination.

Bruns, L.E.

March 1974

Dep., NTIS $4.00

BNL-19224; CONF-740986-1

International Neutron Dosimetry Intercomparison.

Goodman, L.J.; Colvett, R.D.; Caswell, R.S.

1974

Dep. NTIS $5.25

BNL-19302; ENDF-202

Cross Section Evaluation Working Group - Benchmark Specifications.

Alter, H.; Kidman, R.B.; LaBauve, R.; Protsik, R.; Zolotar, B.A.

November 1974

National Neutron Cross Section Center, Brookhaven National Laboratory, Upton, New York 11973

BNL-19344; ENDF-212

Nuclear Data for CTR Related Projects.

Bhat, M.R.; Magurno, B.A.; Pearlstein, S.; Scheffel, F.M.

October 1974

National Neutron Cross Section Center, Brookhaven National Laboratory, Upton, New York 11973

BNL-19455; ENDF-213

Evaluation of the Neutron and Gamma-Ray Production Cross Sections of 151-Eu and 153-Eu.

Takahashi, H.

November 1974

National Neutron Cross Section Center, Brookhaven National Laboratory, Upton, New York 11973

BNL-19456; ENDF-214

Evaluation of the Neutron Cross Section for 152-Eu and 154-Eu.

Takahashi, H.

November 1974

National Neutron Cross Section Center, Brookhaven National Laboratory, Upton, New York 11973

BRL-R-1752

A New X-Ray Spectral Technique.

Klein, N.; Crisco, C.,Jr.

December 1974

Defense Documentation Center, Cameron Station, Alexandria, Va. 22314

CONF-730907-P1, pp.694-699

Dose Due to Practical Neutron Energy Distributions Incident on Concrete Shielding Walls.

Wyckoff, J.M.; Chilton, A.B.

February 1974

Dep., NTIS

CONF-740903-6

Fast Reactor Cross-Section Processing Codes: Is There a Dollar's Worth of Difference Between Them?

Weisbin, C.R.; Greene, N.M.; Henryson, H.,II; LaBauve, R.J.; Durston, C.; Cullen, D.E.; Kidman, R.B.

1974

Dep., NTIS $4.50

CONF-740903-8

ORNL Cross-Section Sensitivity Analysis Applications for Radiation Shielding.

Bartine, D.E.; Mynatt, F.R.; Oblow, E.M.; Childs, R.L.; Pace, J.V.; Engle, W.W.; Knight, J.R.; Sims, T.M.

1974

Dep., NTIS $4.75

CONF-741040-1

Advanced Fuels for Nuclear Fusion Reactors.

McNally, J.R.,Jr.

1974

Dep., NTIS $4.00

CONF-741207-1

Neutron Spectrum Analysis from Dosimetry Experiments.

Kam, F.B.K.; Stallmann, F.W.

1974

Dep., NTIS $5.00

COO-1671-59; CONF-740940-3

RBE-Dose Relations for Neutrons and Pions.

Katz, R.; Sharma, S.C.

1974

Dep., NTIS $4.00

EUR-5157e

Monte Carlo Calculations for the Moderator of the Pulsed Target of the GEEL LINAC.

Bignami, A.; Coceva, C.; Simonini, R.

September 1974

Dep., NTIS (U.S. Sales Only)

EUR-5194e

Half-Life of Some Long-Lived Actinides: A Compilation.

Vaninbroukx, R.

1974

Dep. NTIS (U.S. Sales Only) $5.00

HEDL-TME-74-52

Three-Dimensional Neutronics Calculations of FTR Safety Parameters.

Nelson, J.V.; Hardie, R.W.

August 1974

AT(TIC), AEC

INDC(CCP)-39/U

Nuclear Constants No.8. Providing Nuclear Data for Fast Reactor Calculations. Part 2.

Bazazyants, N.O.; Zabrodskaya, A.S.; Nikolaev, M.N.; Abagyan, L.P.; Nikolaev, M.M.

1972

Dep., NTIS (U.S. Sales Only) $9.50

INDC(CCP)-39/U, pp.1-101

Group Parameters for the Anisotropy of Neutron Scattering.

Bazazyants, N.O.; Zabrodskaya, A.S.; Nikolaev, M.N.

1972

Dep., NTIS (U.S. Sales Only)

INDC(NDS)-61/W + spec.

Papers Presented at the Consultants' Meeting on Charged Particle and Photonuclear Reaction Data, Vienna, 24-26 April 1974 and at the Specialists' Meeting on Nuclear Data for Applications, Vienna, 29 April - 3 May 1974.

Calamand, A.; Lorenz, A. (Eds.)

July 1974

IAEA Nuclear Data Section, Karntner Ring 11, A-1010 Vienna

KFKI-74-45

Self-Shielding of Unresolved Resonances: The *Computer Code* ERICA.

Gago, J.

1974

Dep., NTIS (U.S. Sales Only)

LA-5760

Modified Difference Schemes for the Transport Equation Solution.

Carlson, B.G.

December 1974

Dep., NTIS $4.00

LA-5828-MS; USNDC-CTR-2

The T(d,n) 4-He and T(t,2n) Cross Sections at Low Energies.

Stewart, L.; Hale, G.M.

January 1975

NTIS $4.00

LA-UR-74-1206; CONF-741015-2
First Wall Materials Problems in Fusion Reactors.
Clinard, F.W.,Jr.
1974
Dep., NTIS $4.00

ORNL-4996
Biological Dose and Radiological Activity from Nuclear Reactor or Nuclear Weapon Fission Products.
Chester, R.O.
December 1974
Dep., NTIS $5.45

ORNL-TM-4724
Effect of Actinide Removal on the Long-Term Hazard of High-Level Waste.
Claiborne, H.C.
January 1975
NTIS

ORNL-tr-2846; CONF-7210129-1 (In Russian)
Calculations of Underground Depositories of Liquid Radioactive Wastes.
Kostin, P.P.
1972
NTIS

ORNL-tr-2860; CONF-7210129, pp.11-22 (In German)
Possibilities of Disposal of Liquid Radioactive Wastes into Deep Layers Below Earth's Surface in the German Democratic Republic.
Adam, K.; Koerner, W.
1972
NTIS

ORNL-tr-2861; CONF-7210129-3 (In Russian)
Heat Factor in the Problem of the Underground Disposal of Liquid Radioactive Wastes.
Yudin, F.P.
1972
NTIS

ORNL-tr-2862; CONF-7210129-2 (In Russian)
Studies and Technology of the Subsurface Disposal of Liquid Radioactive Wastes.
Pimenov, M.K.
1972
NTIS

RT/FI-(74)18
Fast Reactor Cross Sections Libraries Up-Dating: Original and Adjusted ENDF/B-III Data in Bondarenko Format.
Salvatores, M.
April 1974
Dep., NTIS (U.S. Sales Only) $9.50

RT/FI-(74)31
Positivity, Dominance, and Uniform Continuity of Solution to the Neutron Integral Boltzmann Equation in Three-Dimensional Critical Systems.
Premuda, F.; Spiga, G.
June 1974
Dep., NTIS (U.S. Sales Only)

SAAS-166
The Board of Nuclear Safety and Radiation Protection of the German Democratic Republic.
Report des Staatlichen Amtes fur Atomsicherheit und Strahlenschutz der DDR
September 1974
Prasident des Staatlichen Amtes fur Atomsicherheit und Strahlenschutz der DDR - 1157 Berlin-Karlshorst, Waldowallee 117

SAAS-168
Physical Problems in Measuring the Exposure Rate over a Contaminated Area from the Air.
Eiteljorge, N.; Schuricht, V.
October 1974
Prasident des Staatlichen Amtes fur Atomsicherheit und Strahlenschutz der DDR - 1157 Berlin-Karlshorst, Waldowallee 117

UCCND-CSD-8
Tables of Moments of the Skewness and Kurtosis Statistics in Non-Normal Sampling.
Bowman, K.O.; Shenton, L.R.
January 1975
NTIS

UCID-15917
Simple Fit for the Hot Compton Cross Section.
Cooper, G.E.; Cummings, J.D.
September 28,1971
Dep., NTIS $4.00

UCRL-75827; CONF-740804-4
Some Considerations of Materials Requirements for Mirror Fusion Reactors.
Pittenger, L.C.
August 13, 1974
Dep., NTIS $4.00

UCRL-76033; CONF-741109-1
Measurements of Neutron Emission Spectra from 14-MeV Neutrons on Thick Targets.
Anderson, J.D.; Hansen, L.F.; Wong, C.
October 1974
Dep., NTIS $4.00

UCRL-76109
Investigations of the Dose to Man from the Wet Deposition of Nuclear Aerosols.
Knox, J.B.; Molemkamp, C.R.
October 1974
Dep., NTIS $5.75

WAPD-TM-1183
Decay Heating Measurements and Calculations for Irradiated 234-U, 233-U, 239-Pu, and 232-Th. (LWBR Development Program).
Gunst, S.B.; Conway, D.E.; Connor, J.C.
July 1974
Dep., NTIS $6.75

WASH-1296
Application of Computers to Controlled Thermonuclear Research.
USAEC, Washington, D.C.
July 1973
Dep., NTIS $5.45

Y-1959
Neutron Importance and Fission Density in Enriched Uranium and Plutonium Metal Spheres.
Mihalczo, J.T.
January 1975
NTIS

Atomkernenergie, 23(3), 195-198
Analytical Evaluation of Resonance Integrals.
Menon, S.V.G.; Sahni, D.C.
1974

Atomkernenergie, 24(2), 89-94
An Investigation of Fuel-Moderator Combinations for Thermal Thermionic Reactors in Space Crafts.
Sahin, S.
1974

Communications on Pure and Appl. Math., 27(4), 523-545
Functional-Analytic Approach to Steady, One-Speed Neutron-Transport Equation with Anisotropic Scattering.
Larsen, E.W.
1974

Eur. J. Cancer, 10(5), 309-311
Problems in Neutron Dosimetry.
Goodman, L.J.
May 1974

Eur. J. Cancer, 10(5), 339-342
Developments in Achieving Optimum Beam Profiles for 15 MeV Neutron Beams.
Greene, D.; Major, D.
May 1974

Health Phys., 27(6), 571-580
Absorbed Gamma Dose Rate for Immersion in a Semi-Infinite Radioactive Cloud.
Dillman, L.T.
December 1974

J. Phys. B, 7(17), 2332-2344
Experimental X-Ray Mass Attenuation Coefficients for Materials of Low Atomic Number in Energy-Range 4 to 25 keV.
Miller, R.H. Greening, J.R.
1974

Mem. Fac. Eng., Kyoto University, 34(1), 60-70
Spatial Distribution of Photoneutrons in an Iron Slab Produced by 20-MeV Electron Bombardment.
Nakamura, T.; Hirayama, H.; Nishino, S.; Hyodo, T.
January 1974

Nucl. Eng. Design, 29(3), 295-310
Forseeable Thermal, Mechanical, and Materials Engineering Problems of Fusion Reactor Power Plants.
Fraas, A.P.
1974

Nucl. Sci. Eng., 56(1), 27-36
Total Neutron Cross Section of Carbon from 1 keV to 15 MeV.
Heaton, H.T.,II; Menke, J.L.; Schrack, R.A.; Schwartz, R.B.
January 1975

Nucl. Sci. Eng., 56(2), 171-178
Tabulation and Empirical Representation of Infinite-Medium Gamma-Ray Buildup Factors for Monoenergetic, Point Isotropic Sources in Water, Aluminum, and Concrete.
Morris, E.E.; Chilton, A.B.; Vetter, A.F.
February 1975

Nucl. Sci. Eng., 56(2), 202-210
Practical Preprocessed Nuclear Data Files for *Fast Reactor Calculations. (Tech. Note)*
Gur, Y.; Yiftah, S.
February 1975

Nucl. Sci. Eng., 56(2), 218-219
Direct Sampling from the Klein-Nishina Distribution for Photon Energies above 1.4 MeV. (Tech. Note)
Koblinger, L.
February 1975

Nucl. Sci. Eng., 56(2), 219-224
Additional Few-Group and Multigroup Calculations of Neutron Penetration. (Tech. Note)
Shure, K.
February 1975

Nucl. Technology, 25(2), 177-179
Preface: Data Development and Testing for Fast Reactor Dosimetry.
McElroy, W.N.
February 1975

Nucl. Technology, 25(2), 180-223
Fuels and Materials Fast-Reactor Dosimetry Data Development and Testing.
McElroy, W.N.; Kellogg, L.S.
February 1975

Nucl. Technology, 25(2), 224-236
Preparation and Characterization of Neutron Dosimeter Materials.
Adair, H.L.; Kobisk, E.H.
February 1975

Nucl. Technology, 25(2), 237-257
Measurement of Absolute Fission Rates.
Grundl, J.A.; Gilliam, D.M.; Dudey, N.D.; Popek, R.J.
February 1975

Nucl. Technology, 25(2), 258-273
Evaluated Decay Scheme Data.
Helmer, R.G.; Greenwood, R.C.
February 1975

Nucl. Technology, 25(2), 274-288
Nonfission Reaction Rate Measurements.
Greenwood, R.C.; Helmer, R.G.; Rogers, J.W.; Dudey, N.D.; Popek, R.J.; Kellogg, L.S.; Zimmer, W.H.
February 1975

Nucl. Technology, 25(2), 289-293
High Flux Level Reaction Rate Measurements.
Zimmer, W.H.; Heinrich, R.R.; Kellogg, L.S.; Matsumoto, W.Y.
February 1975

Nucl. Technology, 25(2), 294-304
Fission-Product-Rate Measurements and Yields.
Dudey, N.D.; Popek, R.J.; Greenwood, R.C.; Helmer, R.G.; Rogers, J.W.; Kellogg, L.S.; Zimmer, W.H.
February 1975

Nucl. Technology, 25(2), 305-329
Helium Production Cross Section of Boron for Fast-Reactor Neutron Spectra.
Farrar, H.,IV; McElroy, W.N.; Lippincott, E.P.
February 1975

Nucl. Technology, 25(2), 330-348
CFRMF Neutron Field Flux Spectral Characterization.
Rogers, J.W.; Millsap, D.A.; Harker, Y.D.
February 1975

Nucl. Technology, 25(2), 349-375
The Secondary Intermediate-Energy Standard Neutron Field at the MOL-ΣΣ Facility.
Fabry, A.; De Leeuw, G.; De Leeuw, S.
February 1975

Nucl. Technology, 25(2), 376-380
ENDF/B File for Dosimetry Applications.
Magurno, B.A.; Ozer, O.
February 1975

Nucl. Technology, 25(2), 381-389
The Central Neutron Spectrum of the Fast Critical Assembly BIG-TEN.
Dowdy, E.J.; Lozito, E.J.; Plassmann, E.A.
February 1975

Nucl. Technology, 25(2), 390-405
Analysis of Dosimetry Measurements in EBR-II.
Sehgal, B.R.; *Rempert*, R.H.
February 1975

Nucl. Technology, 25(2), 406-415
Analysis of Burnups in EBR-II Driver-Fuel Elements.
Meneghetti, D.; Ebersole, E.R.; Walker, P.
February 1975

Nucl. Technology, 25(2), 416-422
Measurement of Fission Product Yields and the Energy Integral Fission Cross Section of Thorium-232 in a Californium-252 Fission-Neutron Spectrum.
Deen, J.R.; Draper, E.L.,Jr.
February 1975

Radiology, 113(1), 181-185
Computer Calculations of Dose for Irregularly Shaped Fields for Cobalt-60 and 6 MV Photons.
Bukovitz, A.G.
October 1974

Strahlentherapie, 147(5), 506-513 (In German)
Structure and Mode of Action of a Monte Carlo Program for Direct Calculation of Dose Distributions.
Doehren, F.R.v.
May 1974

Strahlentherapie, 147(5), 547-554
Report to the International Executive Committee of the Thirteenth International Congress of Radiology from the International Commission on Radiation Units and Measurements.
Wyckoff, H.O.
May 1974

BOOK
INTEGRATED THEORY OF FINITE ELEMENT METHODS.
Robinson, J.
1973
John Wiley and Sons, Inc., 605 Third Avenue, New York, N.Y. 10016

COMPUTER CODES LITERATURE

AAEC/E-319 ..... SPECT
SPECT: A FORTRAN Program for the Analysis of Technetium-99m and Other Gamma Spectra in a Radioisotope Quality Control Environment.
Hetherington, E.L.R.; Wood, N.R.
Australian Atomic Energy Commission Research Establishment, Lucas Heights
June 1974
FORTRAN IBM 360/50
AVAIL: NTIS (U.S. Sales Only)

AAEC/E-328 ..... DOSE
DOSE: A FORTRAN Program for the Calculation of Radiation Dose from Radiopharmaceuticals.
Hetherington, E.L.R.; Wood, N.R.
Australian Atomic Energy Commission Research Establishment, Lucas Heights
September 1974
FORTRAN
AVAIL: NTIS (U.S. Sales Only)

ANL-8089 ..... ANL-TRITIUM
Tritium Transport in an LMFBR.
Kumar, R.
Argonne National Lab., Illinois
August 1974

ANL-8113 ..... ANL-SHELL
Argonne Nuclear Shell-Model System.
Gloeckner, D.H.
Argonne National Lab., Illinois
September 1974 IBM 360
AVAIL: NTIS

BNWL-B-389 ..... DACRIN
DACRIN - A Computer Program for Calculating Organ Dose from Acute or Chronic Radionuclide Inhalation.
Houston, J.R.; Strenge, D.L.; Watson, E.C.
Battelle Memorial Institute, Pacific Northwest Labs, Richland, Washington
December 1974

BRL-MR-2424 ..... FALLOUT
Department of Defense Land Fallout Prediction System Output Processor - Simplified Calculation of Integrated Gamma Exposure.
Wilsey, E.F.; Maloney, J.C.; Tompkins, R.C.
USA Ballistic Research Labs, Aberdeen Proving Ground, Maryland
December 1974

CEA-N-1726 ..... MERCURE-4
MERCURE-4: Three Dimensional Monte-Carlo Program for the Integration of Line of Sight Point Attenuation Kernels.
Devillers, C.; Dupont, C.
Commissariat a l'Energie Atomique, France
1974
FORTRAN IV

Cesk. Radiol., 27(3), 207-214 (In Slovak) ..... CZECH-THERAPY
Rationalizing the Calculation of Dose Distribution in Telecurietherapy.
Matula, P.; Futas, E.; Kundstadt, E.; Klvana, M.
Safarik Univ., Kosice, Czech.
May 1973

CERN-74-9(Vol. I), 146-154 ..... ORION; FOCUS; OMEGA/SFM
Handling of Data from Experiments.
Davies, H.E.
CERN, Geneva
June 1974

CNEA-IN-1-116 ..... ARGEN-GELI
Automatic Analysis of Gamma-Ray Spectra on Small Computers.
Achterberg, E.; Iglesias, F.C.; Jech, A.E.; Moragues, J.A.; Perez, M.; Rossi, J.J.; Scheuer, W.; Suarez, J.F.
Comision Nacional de Energia Atomica, Buenos Aires, Argentina
1973
FORTRAN II
AVAIL: INIS

CONF-721018-(Vol. 4), 1232-1248 ..... LAPH
Anisotropy of Photon Emission in Transport Calculations.
Dudziak, D.J.; Bosler, G.E.
Los Alamos Scientific Lab., New Mexico
1972

CONF-721018-(Vol. 5), 1343-1361 ..... MORSE
ORNL Benchmark Experiment for Neutron Transport in Thick Sodium.
Maerker, R.E.; Muckenthaler, F.J.; Clifford, C.E.
Oak Ridge National Lab, Tennessee
1972

CONF-721018-(Vol. 5), 1427-1443 ... DOT II; DLS; MORSE-K; TIMOC-71; UNC-SAM2; TRAPAR
Intercomparison of Different Methods to Calculate Neutron Transport Along Sodium Ducts.
Amin, E.; Diettrich, O.; Futtermenger, W.; *Groenefeld, G.; Hehn, G.; Herrnberger, V.;* Schmidt, F.; Vogt, H.; Vossebrecker, H.
Univ., Stuttgart
1972

CONF-721018-(Vol. 5), 1459-1471 ..... ANISN; PALLAS-SP; PALLAS-CY
Comparison of One- and Two-Dimensional Discrete Ordinate Calculations with Experimental Results.
Fuse, T.; Yamaji, A.; Miura, T.
Ship Research Inst., Tokai
1972

CONF-721018-(Vol. 5), 1493-1509 ..... VA-MC
Gamma-Ray Transport at 6 and 8 MeV.
Johnson, W.R.; Thompson, W.L.; Risher, D.H.; Hassler, L.A.; Rogers, J.E.
University of Virginia, Charlottesville
1972

CONF-740402-P1, 578-587 ..... DTF-IV
Induced Activity and Decay Power of the Structure of a Stainless Steel Fusion Reactor Blanket.
Nigg, D.W.; Davidson, J.N.
Texas Agricultural and Mechanical University, College Station
1974

CONF-740531 ..... NUCLEAR-MED 4
Proceedings of Fourth Symposium on Sharing of Computer Programs and Technology in Nuclear Medicine, Oak Ridge, Tennessee, May 8-10, 1974.
McClain, W.J.; Maskewitz, B.F. (comps.)
Oak Ridge National Lab., Tennessee
1974
AVAIL: NTIS

CONF-740531, 194-201 ..... RADCOMP II
Calculation of Isodose Curves Around Interstitial and Intracavitary Radiation Sources.
Flowers, W.M., Jr.; Morris, J.O.
University of Mississippi Medical Center, Jackson
1974

CONF-740903-3 .. AMPX; SPHINX; MINX; ETOX; IDX; MC2-2; SDX
Fast Reactor Processing Codes: Is There a Dollar's Worth of Difference Between Them?
Weisbin, C.; Greene, N.M.; Henryson, H.H.; LaBauve, R.J.; Durston, C.; Cullen, D.E.; Kidman, R.B.
Oak Ridge National Lab., Tennessee
1974
AVAIL: NTIS

EUR-5159e SABINE-3
SABINE-3: An Improved Version of the Shielding Code SABINE.
Ponti, C.; Van Heusden, R.
Commission of the European Communities, Ispra, Italy, Joint Nuclear Research Center
1974
AVAIL: NTIS (U.S. Sales Only)

GA-A-13095 ..... IDFX
Use of IDFX Results in Cylindrical Geometry as a Surface Source for IDFX Calculations in Slab Geometry.
Rouse, C.A.; Mathews, D.
General Atomic Company, San Diego, California
August 1974
AVAIL: NTIS

IFA-NR-52-1974 ..... ROMAN-FISS
Multilevel-Multichannel Calculation of the 235U Neutron Fission Cross Section.
Mihailescu, I.M.
Institutul de Fizica Atomica, Bucharest, Romania
1974
FORTRAN IV
AVAIL: NTIS (U.S. Sales Only)

IKE-6-85(In German) ..... DUCT
Neutron Streaming Along Coolant Ducts.
Amin, E.H.A.
Stuttgart University, Inst. fuer Kernenergetik, Germany
July 1973
AVAIL: INIS

JAERI-M-5556(In Japanese) ..... JAERI-GELI
Study on the Analysis of Gamma-Ray Spectra with a Ge(Li) Detector.
Sasamoto, N.; Koyama, K.; Tanaka, S.
Japan Atomic Energy Research Inst., Tokyo
February 1974
AVAIL: NTIS (U.S. Sales Only)

KFK-2002 ..... ISOLA
ISOLA - A FORTRAN IV Code for the Calculation of the Long-Term Dose Distributions in the Vicinity of Nuclear Installations.
Hubschmann, W.; Nagel, D.
Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany
July 1974

KFKI-74-45 ..... ERICA
Self-Shielding of Unresolved Resonances: The Computer Code ERICA.
Gado, J.
Kozponti Fizikai Kutato Intezet, Budapest, Hungary
1974 ICL-1905
AVAIL: NTIS (U.S. Sales Only)

KR-150 ..... O5R
O5R Monte Carlo Calculations of Fast Neutron Reflection from Plane and Curved Concrete Shields.
Sayedahmed, F.; Tveten, U.
Institutt for Atomenergi, Kjeller, Norway
June 1974
AVAIL: NTIS (U.S. Sales Only)

LA-UR-74-1262; CONF-740903-5.. FENT; TRIPLET; DOT-IV
New Transport Methods and Codes.
Lathrop, K.D.
Los Alamos Scientific Lab., New Mexico
1974
AVAIL: NTIS

Nucl. Instrum. Methods, 118(1974), 553-563 ..... *INFN-Nal*
Efficiencies and Response Functions of NaI(Ti) Crystals for Gamma Rays from Thick Disk Sources.
Belluscio, R.; Pantaleo, A.; Vox, A.
Istituto Nazionale di Fisica Nucleare, Sezione di Bari, Istituto di Fisica dell'Universita, Bari, Italy
January 1974

ORNL-TM-4638 ..... MECC-7
Comparisons of Predictions from Two Intranuclear-Cascade Models with Measured Secondary Proton Spectra at Several Angles from 62- and 39-MeV Protons on Various Elements.
Bertini, H.W.; Harp, G.D.; Bertrand, F.E.
Oak Ridge National Lab., Tennessee
August 1974
AVAIL: NTIS

ORNL-TM-4648 ..... VCS
Vehicle Code System (VCS) User's Manual.
Rhoades, W.A.; Emmett, M.B; Morrison, G.W.; Pace, J.V.; Petrie, L.M.
Oak Ridge National Lab., Tennessee
August 1974

ORNL-TM-4664 ..... VCS
Development of a Code System for Determining Radiation Protection of Armored Vehicles (The VCS Code).
Rhoades, W.A.
Oak Ridge National Lab., Tennessee
October 1974
AVAIL: NTIS

RISO-M-1725(In Danish) ..... GDOS; INDOS2
Models for Calculation of External Gamma Doses and Inhalation Doses from Releases of Radioactive Isotopes to the Atmosphere.
Thykier-Nielsen, S.
Danish Atomic Energy Commission, Risoe, Research Establishment
July 1974
AVAIL: NTIS (U.S. Sales Only)

RT/FI-(74)18 ..... CNEN-LIB
Fast Reactor Cross Section Libraries Up-dating: Original and Adjusted ENDF/B-III Data in Bondarenko Format.
Salvatores, M.
Comitato Nazionale per l'Energia Nucleare, Rome, Italy
April 1974
AVAIL: NTIS (U.S. Sales Only)

RT/FI-(74)36 ..... CERBERO
CERBERO: A FORTRAN Program for the Calculation of Nuclear Reaction Cross Sections.
Fabbri, F.; Reffo, G.
Comitato Nazionale per l'Energia Nucleare, Rome, Italy
August 1974
AVAIL: NTIS (U.S. Sales Only)