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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Those who cannot remember the past
are forced to recreate it.

. . . Santayana

ANS SHIELDING AND DOSIMETRY DIVISION NEWS

EXECUTIVE COMMITTEE

The Shielding and Dosimetry Division of the American Nuclear Society will be led (1974-1975) by the following officers: David K. Trubey (ORNL-RSIC), Chairman; Edward A. Straker (SAI-Huntsville), Vice Chairman; Lawrence Harris (IRT-San Diego), Secretary; and Murray A. Schmoke (BRL), Treasurer. New members of the Executive Committee are: Gordon L. Brownell (MGH-Boston); Betty F. Maskewitz (ORNL-RSIC), and Arthur B. Chilton (U. Ill.). They join committee members: Anthony H. Foderaro (PSU); Siegfried A. W. Gerstl (ANL); Herbert Goldstein (Columbia U.); Charles M. Huddleston (NBS); Clyde P. Jupiter (EG&G); and Fred R. Mynatt (ORNL).

NAME CHANGE?

A study is presently being made to determine if a name change for the ANS Shielding and Dosimetry Division is in order. These efforts are being spurred by "shielders" in the power reactor design and operation business. They find themselves addressing radiation protection problems in plant design which require consideration of HVAC systems, piping systems, equipment layout, maintenance and decontamination, as well as calculating shield wall thicknesses.

The general field of radiation protection is already within the scope of the Shielding and Dosimetry Division activities. A proposed scope drafted by Eric Clarke and his group in 1968 included radiation protection as well as shielding and dosimetry as division responsibilities.

The Preamble reads as follows: "The Shielding and Dosimetry Division is concerned with promoting the free interchange of information and stimulating scientific research and engineering activities involving radiation shielding and dosimetry. The Shielding and Dosimetry Division provides a forum for persons engaged in research and engineering activities involving shielding and radiation."

The scope adopted by the division in November 1969 reads: "The Division shall devote itself specifically to the following aspects of nuclear science and technology: generation and transport of particulate and electromagnetic radiation; interaction of nuclear radiation with materials and biological systems, as it affects radiation transport and energy deposition; instruments and techniques for the measurement of nuclear radiation fields; radiation shield design and

evaluation; and radiation protection and safety."

The present reemphasis of radiation protection activities has suggested a name such as "Shielding and Radiation Protection Division." A straw vote will be taken via the Shielding and Dosimetry Division newsletter before a proposed name change will be placed on a final ballot.

Jerry Lahti, Sargent and Lundy, Chicago, is chairman of the ad hoc committee to look into a name change. He will welcome your comments and suggestions.

STUDENTS' SHIELDING DATA HANDBOOK

Jack Courtney is serving as the chairman of an ANS Shielding and Dosimetry Division ad hoc committee that has the objective of producing a students' handbook of shielding data. This document would present tables, graphs, and nomograms from a variety of sources in a low-cost format. Suggestions from the shielding and radiation protection community on the content would be welcomed by Jack. He can be reached at: Nuclear Science Center, Louisiana State University, Baton Rouge, La. 70803.

WE NEED YOUR FEEDBACK

John M. Arras, Armed Forces Radiobiology Research Institute, writes the following: "I find the current format of the RSIC Newsletter quite satisfactory. The use of small block items is convenient, since the newsletters are bulky, and I rarely wish to order any item immediately. By cutting out individual items, I can add to my shielding (and related information) notebook, at the rate of several new items from each issue. This enables me to keep a current mini-bibliography, at least, more current than is possible with NSA. Also, I appreciate the inclusion of dosimetry, detector, and other information not directly related to shielding, since most of my problems are practical, rather than theoretical."

ENDF/B-IV DATA RELEASED

The fourth release of the Evaluated Nuclear Data File (ENDF/B-IV) is now in process. Five tapes have been released by the National Neutron Cross Section Center (NNCSC) at Brookhaven National Laboratory (BNL). The released data are ENDF/B tapes 401 (Rev. 1), 402, 403, 404, and 405. The remaining tapes are expected to be released over the next few months. Requests for this data should be made to BNL's NNCSC, not to RSIC.

COMPUTER CODE COLLECTION (CCC) CHANGES

Several changes were made to the code collection during the month.

CCC-82D/ANISN-W — The PERT-1D perturbation theory code employing linear first order techniques with multigroup angular dependent flux data from the ANISN-W discrete ordinates transport code has been contributed to RSIC by Westinghouse Astronuclear Laboratory. It has been packaged as an auxiliary routine to CCC-82D/ANISN-W, operable on the CDC-6600. It may also be requested separately. A reel of magnetic tape is required for transmittal.

CCC-209/DOT III — The Two-Dimensional Discrete Ordinates Radiation Transport Code package has been completely updated by ORNL to reflect development during the past year. GRTUNCL has been added as an auxiliary routine. A full reel of magnetic tape is required for transmittal.

CCC-222/TWOTRAN II — The Two Dimensional Multigroup Discrete Ordinates Transport Code in (r,θ) Geometry has been updated by LASL to correct an error in the ordering of the S_n constants. In all problems tested, the effect is small, but theoretically the steeper the θ flux gradient, the more pronounced the effect can be. However, in one problem with control rods, and consequently with very rapid θ gradients, very little eigenvalue change was observed. In the TWOTRAN (r,θ) geometry S_4 test problems, the eigenvalue change was less than 0.1%. Users should rerun typical problems of their own to assess the effect of the change. All versions of the code (IBM and CDC) have been corrected and are available from RSIC. A full reel of tape is required for transmittal.

CCC-232/CYGNUS-C SPHERE — Monte Carlo Neutron Transport Code in Spherical Geometry has been contributed by Department of Nuclear Engineering, Kyoto University, Japan. FORTRAN IV.

CCC-161C/NMTC — The CDC 6600/7600 versions of the Monte Carlo Nucleon-Meson Transport Code System has been updated by the Los Alamos Scientific Laboratory to correct errors and to reflect additional code development. A reel of magnetic tape must accompany a request for the new code package.

DO YOU WANT A COPY

We have several copies of each of the following reports which we would like to put into circulation. Please let us know if you want a copy.

ORNL-TM-4464 (Feb. 1974) - "Gamma-Ray Production Due to Neutron Interactions with Zinc for Incident Neutron Energies Between 0.85 and 20 MeV: Tabulated Differential Cross Sections," J. K. Dickens, T. A. Love, G. L. Morgan, ORNL.

ORNL-4933 (January 1974) - "Energy Deposition by 45-GeV Photons in H, Be, Al, Cu, and Ta," R. G. Alsmiller, Jr., J. Barish, ORNL.

ORNL-TM-4538 (April 1974) - "Gamma Ray Production Due to Neutron Interactions With Fluorine and Lithium for Incident Neutron Energies Between 0.55 and 20 MeV: Tabulated Differential Cross Sections," J. K. Dickens, T. A. Love, G. L. Morgan, ORNL.

ORNL-TM-4544 (May 1974) - "Gamma-Ray Production Due to Neutron Energies Between 0.8 and 20 MeV: Tabulated Differential Cross Sections," J. K. Dickens, T. A. Love, G. L. Morgan, ORNL.

ORNL-TM-3667 (January 1972) - "Monte Carlo Calculations of High-Energy Nucleon-Meson Cascades and Comparison With Experiment," T. W. Armstrong, R. G. Alsmiller, Jr., K. C. Chandler, and B. L. Bishop, ORNL.

ORNL-TM-4490 (March 1974) - "Calculated Physical and Biological Results When Negatively Charged Pions are Used to Irradiate a Small and a Large "Tumor" Volume in a Tissue Phantom," R. T. Santoro, R. G. Alsmiller, Jr., ORNL.

ORNL-TM-3659 (Rev.) (November 1972) -"Calculations of the Transport of Neutrons and Secondary Gamma Rays Through Concrete for Incident Neutrons in the Energy Range 15 to 75 MeV," R. W. Roussin, R. G. Alsmiller, Jr., J. Barish, ORNL.

ORNL-TM-4134 (January 1974)- "HIC-1: A First Approach to the Calculations of Heavy-Ion Reactions at Energies $\geq$ 50 MeV/Nucleon," H. W. Bertini, T. A. Gabriel, R. T. Santoro, O. W. Hermann, N. M. Larson, J. M. Hunt, ORNL.

PROCEEDINGS OF THE THIRD INTERNATIONAL CODATA CONFERENCE

CODATA is the acronym of the Committee on Data for Science and Technology of the International Council of Scientific Unions (ICSU). Proceedings of the Third International CODATA Conference on Generation, Compilation, Evaluation and Dissemination of Data for Science and Technology contain thirty-three of the contributions presented at the Conference in Le Creusot, France, June 26-29, 1972. The topics covered in the Conference include: International Framework of CODATA; Progress of CODATA; Earth and Atmospheric Sciences; Biological Sciences; Astronomy and Astrophysics; Engineering Sciences; Computer Topics of Special Interest to Data Analysis Centers; Special Topics Important to Data Analysis Center Operations; and Accessibility and Dissemination of Critical Reviews and Data Compilations. The Proceedings are available for the price of $12.00 from CODATA Secretariat, 51 Boulevard de Montmorency, 75016 Paris, France.

COMPILATION OF CROSS SECTIONS III -p and $\bar{p}$ INDUCED REACTIONS

A new compilation in the area of high-energy physics from CERN, the European Organization for Nuclear Research, Geneva, Switzerland, is available to interested users in the Western Hemisphere and the Far East by writing to the Lawrence Radiation Laboratory, Berkeley, California 94720. CERN/HERA 73-1, 1.6. 1973, Compilation of Cross Sections III -p and $\bar{p}$ Induced Reactions, by E. Bracci, J. P. Drouley, E. Flaminio, J. D. Hansen and D. R. O. Morrison is a compilation of cross sections of reactions produced by protons and antiprotons on targets of protons, neutrons and deuterons. This is an updated version of CERN/HERA 70-2 and 70-3 and contains forty percent more data values than the earlier publications. Graphs of the variation of cross section with incident laboratory momentum are plotted. Values of the rate of decrease of cross section with incident momentum are provided.

PERSONAL ITEMS

We note the following changes in employment: Robert Burnside- from Westinghouse, Pittsburgh, to Florida Power and Light Company, Miami; Mike Nagel - from TRW to General Atomic, San Diego; William R. Yucker - from McDonnell Douglas Astronautics Corporation to Simulation Physics, Inc., Irvine, California; James (Jim) Stewart - from USAEC-DRRD to Los Alamos Scientific Laboratory, New Mexico; John Hobart - from McDonnell Douglas Astronautics to TRW Systems, Redondo Beach, California; Teruo Nagai - from National Institute of Radiological Sciences, Chiba, to Professor, Department of Radiological Sciences, Faculty of Medicine, Gunma University, Showa-machi, Maebashi, Japan.

The following changes of address have been noted: Yoshiharu Higashihara - from Power Reactor and Nuclear Fuel Development Corp. to Nuclear Power Research and Development Department, Kawasaki Heavy Industries, Ltd., Hamamatsu-cho, Minato-ku, Tokyo, Japan; J. A. Lonergan, Science Applications, Inc., La Jolla,to Rolling Meadows, Ill.; Mr. R. Dietrich - from Krupp Maschinenfabriken - Kerntechnik, Essen, to Ges. F. Kernenergieverwertung in Schiffbau und Schiffahrt MBH, Institut F. Anlagentechnik, Geesthacht-Tesperhude, W. Germany; Austin A. O'Dell - Mission Research Corp., Santa Barbara, to Lawrence Livermore Laboratory, Livermore, California; Dr. R. Ziskind - TRW Systems Group, Redondo Beach, California, to Science Applications, Inc., 101 Continental Bldg., El Segundo, California; Paul S. Pickard - from Nuclear Engineering Program, University of Illinois at Urbana, to Reactor Studies Division, Sandia Laboratories, Albuquerque, N. M.

Andre Jacob, INRS-Energie, Varennes, Quebec, Canada, writes that his group is currently engaged in research in radiation damage and shielding for fusion reactors. They have used the ANISN code (CCC-82) for fusion reactor blanket simulation, and will use it with DLC-27 library for concrete shielding calculations. The blanket simulation is completed and a copy of the results (Guy Lavergne Thesis) will be sent to RSIC.

VISITORS TO RSIC

Visitors to RSIC during the month of June were: R. W. Birkhahn, Brown, Boveri & CIE, Mannheim, W. Germany; K. D. George, Union Carbide Corporation, Tuxedo, New York; J. D. Gordon and R. Karcher, TRW, Redondo Beach and San Bernardino, Calif.; A. Pressesky, USAEC, Washington, D.C.

DNA PROCESSED LIBRARY DOCUMENTATION

The new class of processed data libraries, first announced in the June 1, 1974 RSIC Newsletter, will be documented in ORNL-RSIC-37, "The Defense Nuclear Agency Processed Cross Section Library." It is planned that the report be a 3-ring binder and that the contents will be loose-leaf form to which additions can be made as new libraries are added to the DLC-31/DPL collection.

In order to help us estimate the number of binders to order, we will appreciate your completing the form below and returning it as soon as possible.

ORNL-RSIC-37

THE DEFENSE NUCLEAR AGENCY PROCESSED CROSS SECTION LIBRARY will be available in a couple of months. Please return this coupon if you would like to receive a copy. Please reserve a copy of ORNL-RSIC-37 for:

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(Name)

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(Name of Installation)

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(Address)

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JUNE ACCESSION OF LITERATURE

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

AEC-TR-7432
Short Course on Thermoelectric Devices and Their Applications.
Kolomoetz, N.V.
No Date
Dep., NTIS $3.00

AAEC-E-214
Fission Product Group Cross Section Library.
Bertram, W.K.; Clayton, E.; Cook, J.L.; Ferguson, H.D.; Musgrove, A.R.; Rose, E.K.
June, 1971
Dep., NTIS (U.S. Sales Only)

AECL-4591
One-Day Introduction to Radiation Protection Principles.
Fenn, J.H.; White, J.M.; Watson, L.C.
January, 1974
Atomic Energy of Canada Limited, Chalk River

AECL-4704
Status of Fission Product Yield Data for Thermal Reactors.
Walker, W.H.
February, 1974
Dep., NTIS (U.S. Sales Only)

AEEW-R-915
The Importance of Fission Product Nuclear Data in the Physics Design of Power Reactor Cores.
Tyror, J.G.
December, 1973
Dep., NTIS (U.S. Sales Only)

AEEW-M-1242
One Group Fission Product Capture Cross Sections as Used in Fast Reactor Calculations.
Dean, C.J.
January, 1974
NTIS

ANL-AP/CTR/TM
Fast Neutron Processes in Niobium - Measurements and Evaluation.
Smith, A.B.; Whalen, J.F.; Guenther, P.T.
March, 1973
Argonne National Laboratory, Lemont, Ill.

ANL/BIM-72-1
Total Line Shape Analysis of Digitized Experimental Spectra Using an Iterative Non-Linear Least Squares Fitting Procedure.
Kramer, A.P.; Angermann, N.S.; Danyluk, S.S.
February, 1972
Dep., NTIS

AREAEE-172
A Study of Slow Neutron Space-Energy Distributions in Water Near Cadmium, Boron-Carbide and Copper Rod Elements.
Hussein, A.; Eid, Y.; Kawi, A.A.; Zakharkin, I.; Hamouda, I.
1973
Atomic Energy Establishment, Cairo, Egypt

AREAEE-179
Legendre Expansion and Coordinate Transformation.
Comsan, M.N.H.
1973
Atomic Energy Establishment, Cairo, Egypt

BNWL-SA-4962; CONF-740034-1
Nuclear Radiation: Sources and Impact.
Unruh, C.M.
April, 1974
Dep., NTIS $4.50

DNA-31602; AD-766509; MR-7033; N74-16407
SAM-CE Monte Carlo Calculations of Nitrogen and Carbon Ball Integral Experiments. Final Report.
Cohen, M.O.; Beer, M.
November 28, 1973
NTIS

EURFNR-1130 (Translation)
SNOW: A Two-Dimensional SN Program for Solving the Neutron-Transport Equation in Rectangular and Cylindrical Geometry.
Gunther, C.; Kinnebrock, W.
July, 1973
NTIS

INDC(CCP)-33/L
Determination of Required Accuracy of Nuclear Data.
Usachev, L.N.; Bobkov, Yu.G.
July, 1973
IAEA Nuclear Data Section, Karntner Ring 11, A-1010, Vienna

INDC(NDS)-55/L
Cross Sections for Fission Neutron Spectrum Induced Reactions.
Calamand, A.
September, 1973
IAEA

INDC(NDS)-56/U
Proceedings of a Consultants' Meeting on Nuclear Data for Reactor Neutron Dosimetry, Vienna, 10-12 September 1973.
IAEA
February, 1974
IAEA

INTEL-RT-7011-001
The (n, alpha) Cross Sections of 6-Li and 10-B Between 1 and 1500 keV.
Friesenhahn, S.J.; Orphan, V.J.; Carlson, A.D.; Fricke, M.P.; Lopez, W.M.
February, 1974
Intelcom Radiation Technology, P.O. Box 81087, San Diego, California 92138

JAPFNR-133 (Translation); JAERI-Memo-5237
One-Dimensional 70-Group P1 Code (Production of Fast Reactor Group Constants (1)-3).
Katsuragi, S.; Narita, H.; Suzuki, T.; Hasegawa, A.
April, 1973
USAEC Technical Information Center, Oak Ridge, Tenn.

LA-5577-PR
Transport Code Development and Code-Coordination Program. Quarterly Report - October 1 through December 31, 1973
Vigil, J.C. (Comp.)
April, 1974
University of Calif., Los Alamos Scientific Laboratory, P.O. Box 1663, Los Alamos, New Mexico 87544

LA-UR-74-608; CONF-740402-15
Effect of Be(n,2n) Multigroup Treatment on Theta-Pinch Blanket Nucleonics.
Soran, P.D.; Dudziak, D.J.; Muir, D.W.
1974
Dep., NTIS $4.00

LIB/Trans-491
Gamma Spectrum Generated During the Capture of Thermal Neutrons by Nuclei of 70-, 72-, 74-Ge.
Barchuk, I.F.; Bazavov, D.A.; Belykh, G.V.; Golyohkin, V.I.; Murzin, A.V.; Ogorodnik, A.P.
1970
Dep., NTIS (U.S. Sales Only) $3.00

NASA-TM-X-71522; Thesis; N74-17424
Extension of Case's Method to the Two-Region Critical Cylinder and Its Application as an Analytic Standard.
Westfall, R.M.
May, 1974
NTIS $9.50

NASA-TR-R-412
Analysis of Laminated, Composite, Circular Cylindrical Shells with General Boundary Conditions.
Srinivas, S.
April, 1974
NTIS

NBS Special Publication 330, 1972 Ed.
The International System of Units (SI).
Page, C.H.; Vigoureux, P.
April, 1972
GPO 30 cents

NOLTR-73-137
Computation of the Residual Radiation Transmission Factor for the Marine Corps LVTP7.
Cawley, R.G.
September 28,1973
Naval Ordnance Laboratory, White Oak, Silver Spring, Maryland 20910

NP-19934 (In Spanish)
Annual Report, 1971.
Comision Nacional de Energia Atomica, Buenos Aires (Argentina)
1973
Dep., NTIS (U.S. Sales Only) $5.75

NPL-NAC-39; N74-15306
Numerical Quadrature. A Survey of Available Algorithms.
Dixon, W.A.
June, 1973
NTIS $4.50

ORNL-4909; ENDF-206
206-Pb, 207-Pb, and 208-Pb Neutron Elastic and Inelastic Scattering Cross Sections from 5.50 to 8.50 MeV.
Kinney, W.E.; Perey, F.G.
June,1974
NTIS $5.45

ORNL-TM-4474
Fluxes of Charged and Neutral Particles from Tokamaks.
Hogan, J.T.; Clarke, J.F.
April,1974
NTIS

ORNL-TM-4544
Gamma-Ray Production Due to Neutron Interactions with Magnesium for Incident Neutron Energies Between 0.8 and 20 MeV: Tabulated Differential Cross Sections.
Dickens, J.K.; Love, T.A.; Morgan, G.L.
May,1974
NTIS

ORNL-TR-1658; EUR-2960 (In German)
Shielding Experiments in the Geesthacht Research Reactor. Annual Report, 1965.
Bagge, E.; Fischer, E.
No Date
Dep., NTIS $13.00

ORNL-TR-2111
Can the Radioactive Wastes from Many Nuclear Power Plants Still Be Kept Under Control.
Holtzem, H.; Schwibach, J.
1968
Dep., NTIS $3.00

SLAC-Trans-156
Measurement and Reproduction of the Roentgen Exposure Unit at the German Measurement and Testing Agency. Part II. Cavity Ionization Chambers for 60-Co and 137-Cs Gamma Radiation.
Hecker, O.; Rothe, H.
1972
Dep., NTIS $3.25

STI/DOC-10-152
Evaluation of Radiation Emergencies and Accidents: Selected Criteria and Data.
Vallario, E.J.
March, 1974
IAEA $6.00

STI/PUB-318
Neutron Monitoring for Radiation Protection Purposes. Vol. 1. (Proceedings of a Symposium, Vienna, 11-15 December 1972).
IAEA
1973
IAEA $16.00

UCID-16372
Calculational Models for LLL Pulsed Spheres. CSEWG Shielding Benchmark Collection No. SDT 10.
Plechaty, E.F.; Howerton, R.J.
October, 1973
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UCRL-50400, Vol.7
An Integrated System for Production of Neutronics and Photonics Calculational Constants. Volume 7, Part A. Graphical, Experimental Data for Major Neutron-Induced Interaction ($Z \leq 55$).
Cullen, D.E.; Haight, R.C.; Howerton, R.J.; MacGregor, M.H.; Perkins, S.T.
April 1, 1974
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Acta Radiol., Ther., Phys., Biol., 11(6), 593-602
Angular Distribution of Radiation Scattered from a Phantom Exposed to 10 to 50 kVp Roentgen Rays.
Benstock, D.M.J.; Burlin, T.E.
December, 1972

Atomic Data, 3(3), 241-297
Survey of Photon-Attenuation-Coefficient Measurements 10 eV to 100 GeV.
Hubbell, J.H.
November, 1971

Atomic Data and Nucl. Data Tables, 13(2-3), 89-292
Radioactive-Decay Gammas. Ordered by Energy and Nuclide.
Bowman, W.W.; MacMurdo, K.W.
February, 1974

Atomic Data and Nucl. Data Tables, 13(4), 293-337
Compilation of Phenomenological Optical-Model Parameters. 1969-1972.
Perey, C.M.; Perey, F.G.
April, 1974

Atomkernenergie, 22(2), 113-115 (In German)
Design of An Additional Shielding Layer for a Duct in a Concrete Shielding Wall.
Fiebig, R.; Yamaji, A.
October, 1973

Health Phys., 26(4), 287-293
A Model for Exposure to a Semi-Infinite Cloud of a Photon Emitter.
Poston, J.W.; Snyder, W.S.
April,1974

Health Phys., 26(4), 295-300
A Method for the Calculation of Beta-Ray Dose.
Valley, J.F.; Kushelevsky, A.P.; Lerch, P.
April,1974

Health Phys., 26(4), 313-318
Rationale for Radiation Protection.
Hurst, G.S.; Garrett, W.R.; Payne, M.G.
April,1974

Int. J. Appl. Radiat. Isotop., 25(1), 25-29
Measurement of Gamma-Ray Attenuation Coefficients.
Christmas, P.
January,1974

J. Comput. Phys., 13(4), 569-590
Finite Difference Scheme for Time-Dependent Spherical Radiation Hydrodynamics Problems.
Zinn, J.
December,1973

J. Math. Anal. Appl., 42(3), 578-593
Nonlinear Neutron-Transport Equations.
Pao, C.V.
1973

Kernenergie, 16(12), 378-383
Spectra of Neutrons Transmitted Through Shields of Different Materials and Thicknesses.
Makra, S.; Vertes, P.
December,1973

Kerntechnik, 15(10), 414-467 (In German)
Build-Up Factors for 14.1-MeV Neutrons in Different Materials.
Deimel, E.; Deimel, P.
October,1973

Nucl. Eng. Design, 25(3), 325-333
'ENDS' - European Nuclear Documentation Service.
Vernimb, C.O.; Steven, G.
August,1973

Nucl. Eng. Design, 25(3), 334-349
Offshore Nuclear Power Plants.
Orr, R.S.; Dotson, C.
August,1973

Nucl. Eng. Design, 25(3), 441-448
Availability of Nuclear Standards Information.
Cottrell, W.B.
August,1974

Nucl. Instrum. Methods, 79(2), 224-228
The Effect of a Finite Size Source on Angular Distribution Attenuation Coefficients.
Heighway, E.A.; MacArthur, J.D.
March 15,1970

Nucl. Instrum. Methods, 117(1), 93-98
Estimation of Gamma-Ray Exposure in Mixed Gamma-Neutron Fields by 6-LiF and 7-LiF Thermoluminescence Dosimeters in Pair Use.
Tanaka, S.; Furuta, Y.
May 1,1974

Nucl. Instrum. Methods, 117(1), 99-107
Shaped Scintillation Detector Systems for Measurements of Gamma-Ray Flux Anisotropy.
Trombka, J.I.; Vette, J.I.; Stecker, F.W.; Eller, E.L.; Wildes, W.T.
May 1,1974

Nucl. Instrum. Methods, 117(1), 125-129
A Monte-Carlo Method for Calculation of the Distribution of Ionization Losses.
Ispirian, K.A.; Margarian, A.T.; Zverev, A.M.
May 1,1974

Nucl. Sci. Eng., 54(2), 101-115
Relativistic Compton Scattering by the Discrete Ordinates Method.
Stephan, B.G.; Bridgman, C.J.
June,1974

Nucl. Sci. Eng., 54(2), 116-126
Single-Level Analysis of the Uranium-233 Fission Cross Section for Neutron Energies Between 6 and 124 eV.
Nizamuddin, S.; Blons, J.
June,1974

Nucl. Sci. Eng., 54(2), 127-142
Neutron Pulses Slowing Down in Heavy Media Analysis With Applications of the Lead Spectrometer.
Sawan, M.; Conn, R.W.
June,1974

Nucl. Sci. Eng., 54(2), 143-156
Correcting for Emission-Time Effects in Neutron Time-of-Flight Data Using Multiple Time Spectra.
Robitaille, H.A.; Hewitt, J.S.
June,1974

Nucl. Sci. Eng., 54(2), 177-189
Calculation of the Decay Power of Fission Products.
Tasaka, K.; Sasamoto, N.
June, 1974

Nucl. Sci. Eng., 54(2), 196-200
Functionals to Represent the Neutron Flux in Fast Pulsed Assemblies.
Knickle, H.N.; Daitch, P.B.
June, 1974

Nucl. Technology, 22(2), 229-236
Some Characteristics of Radioisotope Power Sources in an Ocean Environment.
Erdmann, R.C.; Gritton, E.C.; Ozeroff, M.J.
May, 1974

Nucl. Technology, 22(2), 275-297 (ORNL-4880)
The ORNL Benchmark Experiment for Neutron Transport in Thick Sodium.
Maerker, R.E.; Muckenthaler, F.J.; Childs, R.L.
May, 1974

Phys. Rev. A, 8(6), 2814-2818
Gamma-Ray Attenuation Coefficient Measurements.
Gopal, S.; Sanjeevaiah, B.
December, 1973

Phys. Med. Biol., 19(2), 171-185
Theoretical Evaluation of Plastic Dosimetry Phantoms.
Peschel, R.E.; Schulz, R.J.
1974

Report of NRL Progress, 1973(Oct), 52-56
Radiation Shielding for Quartz Crystal Oscillators in Satellites. (Brief Comm.)
McCrary, J.H.; Lambert, R.J.
1973

Rev. Gen. Therm., 7, 85-96 (In French)
Cements and Concretes for Nuclear Radiation Shielding.
Baouman, A.C.
July, 1973

BOOK
AN INTRODUCTION TO RADIATION PROTECTION.
Martin, A.; Harbison, S.A.
1972
Halsted Press $7.75 cloth; $4.75 paper

BOOK
GLOSSARY OF TERMS USED IN NUCLEAR SCIENCE AND TECHNOLOGY.
British Standards Institution, London
1973

COMPUTER CODES LITERATURE

JAPFNR-97 March 1972 2D-GAMMA
2D-GAMMA: Two-Dimensional Gamma Heating Code for Fast Reactors.
Mitsubishi Atomic Power Industries, Inc., Omiya, Japan

IFA-NR41-1972 1972 235U
Multilevel Calculation of 235U Neutron Fission Cross-Section.
Mihailescu, I.M.; Petrascu, M.
Institutul de Fizica Atomica, Bucharest, Romania
FORTRAN IV

HEDL-TME-72-134 December 1972 3DP
3DP, A Three Dimensional Perturbation Theory Code.
Hardie, R.W.; Little, W.W.
Hanford Engineering Development Laboratory, Richland, Washington
FORTRAN

ORNL-TM-4257 June 1973 ADLER-III
ADLER-III: A Program to Calculate Cross Sections From ADLER-ADLER Resonance Parameters.
Wright, R.Q.
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