

# RSIC Newsletter



RADIATION SHIELDING INFORMATION CENTER

## OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE DEPARTMENT OF ENERGY

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*If you would be remembered, do one thing superbly well. . . Saunders  
Norvell*

### What is Health Physics?

In an interesting letter to the editor, *Health Physics* 42 (1), 91 (January 1982), Lauriston Taylor points out that the current meaning of "health physics" is simply radiation protection. It was a term coined in the wartime Manhattan Project to mean radiological physics, but now it has outlived its usefulness, especially in communicating with people outside the field. We agree with Taylor that "Health physics is *in fact* now not a synonym for radiation protection, in which sense it is normally used. It is actually a *misnomer* for only one part of the subject. National understanding would be increased were we to rename the Health Physics Society the American Radiation Protection Society, or some such."

### Volume Five of RSIC Computer Code Abstracts to be Issued

A concerted effort is underway to publish Volume V of ORNL/RSIC-13, "Abstracts of Digital Computer Code Packages Assembled by the Radiation Shielding Information Center." This volume, in loose-leaf form, will include all code packages in the CCC collection from CCC-264 to approximately CCC-415. We are making this announcement to determine the number of copies to print. Therefore, if you wish to reserve a copy please let us know.

### CHANGES TO THE CODES COLLECTION

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

**CCC-204/SWANLAKE** The IBM version (A) of SWANLAKE, a cross section sensitivity analysis code for one-dimensional discrete ordinates calculations, has been replaced by a newly frozen version. This new version, supplied by Oak Ridge National Laboratory, represents a compromise of the original version and a local version which contained some desirable features. Details of the differences in previously packaged versions and the new package may be requested from RSIC. FORTRAN IV; IBM and CDC 6600.

**PSR-159/RENDER** This collection of ENDF/B-V pre-processing codes is a contribution of the Lawrence Livermore National Laboratory and the Nuclear Data Section of the International Atomic Energy Agency, Vienna, Austria. The package contains LINEAR to convert cross sections to linearly interpolable form, RECENT to add the resonance contribution to the background cross section, SIGMA1 to Doppler broaden, GROUPY to perform multigroup averaging, MERGER to retrieve and merge, SORTER to re-order ENDF data, EVALPLOT to plot ENDF data, and CONVERT to automatically convert the above programs for use on IBM, CDC, or CRAY computers. Sample input for the codes is provided and selected codes are now undergoing tests in RSIC. Reference: UCRL-50400, Vol. 17, Parts A-E. FORTRAN. IBM 370/3033.

**PSR-169/ALPHA-M** A least squares code package for analyzing gamma-ray spectra of environmental samples was contributed by the Tennessee Valley Authority, Muscle Shoals, Alabama. Capability for creating standard libraries for the calculation is included in the package. Spectra may be simulated for ALPHA-M analysis. Tests for evaluating the standard libraries selected for use in analyzing environmental samples are provided. Reference: TVA/EP-78/02; EPA-600/7-77-089. FORTRAN IV; IBM 360/370.

**PSR-170/FORSEN** A code system for computing spectrum-averaged group cross sections and producing output in ENDF format was contributed by the National Nuclear Data Center, Brookhaven National Laboratory, Upton, New York, and Southern Company Services, Birmingham, Alabama. Providing systematic information for sensitivity studies, the code handles two input files (which were previously processed using RESEND-LINEAR-SIGMA1) and produces spectrum-averaged cross sections and their corresponding percent changes between the two input data sets over a specified number of groups (up to 200). The output can be used in codes such as SENTINEL to access the effects, based on sensitivity profiles, of cross section changes. Reference: Informal paper "The FORSEN Code". IBM 360/370.

**PSR-171/NJOY-II** Continuing development in the NJOY code system series for producing pointwise and multigroup neutron and photon cross sections from ENDF/B evaluated nuclear data has resulted in a newly frozen version, designated NJOY-II, a contribution of Los Alamos National Laboratory. There are several important differences between the original PSR-118/NJOY and the new NJOY-II. Current users of PSR-118/NJOY may request information describing the differences and copies of the addendum to the documentation from RSIC. Future requests for the package will be filled with the new version. At the present time, CDC hardware is the only hardware version available. An IBM version will be available at some future time. FORTRAN IV; CDC.

**PSR-172/TDOWN-IV** A code system designed to generate composition and spatially dependent neutron cross sections for multigroup neutronics analysis, was contributed by the General Electric Company, Sunnyvale, California.

TDOWN-IV generates spatial- and composition-dependent neutron cross section sets for both core and shielding analysis. Input can be as simple as a description of material compositions with an input flux spectrum or as complex as a description of a multi-regional two-dimensional reactor or shield and associated cells with several zero- or one-dimensional diffusion or transport theory flux solutions ( $k_{eff}$  or fixed source) to provide the flux for spectral adjustments of the cross section sets. Reference: GEFR-00485. FORTRAN IV; HONEYWELL 6600.

**SCA-1/HEATING5** Two modifications were made to HEATING5, the generalized heat conduction code system, to correct errors which were detected during routine use of the code and called to RSIC attention by the originators at the Oak Ridge National Laboratory. Details of the modifications may be requested from RSIC. IBM 360/370.

#### CHANGE IN DATA COLLECTION

A new contribution was made to the data collection during January.

**DLC-89/LUMP** This evaluated lumped fission product cross section library, based on ENDF/B-V data, was contributed by Argonne National Laboratory. Suitable for mixed oxide core fast reactor applications, this data package contains results of investigations based on one lump models. Fission product inventories at various burnup steps were calculated by the EPRI-CINDER-2 code and used as weighting functions for lumping. Data are in ENDF/B-V format and the MERGE retrieval program is included in the format of the cross sections. Reference: FRA-TM-134. IBM 360/370.

#### PERSONAL ITEMS

*Keran O'Brien* has been named director of the Radiation Physics Division of the U.S. Department of Energy's Environmental Measurements Laboratory in New York. His new responsibilities include planning, developing, and coordinating the division's scientific studies in radiation physics. Since joining the laboratory in 1954, O'Brien has published over 100 journal articles and reports in such areas as radiation transport, spectral unfolding, and related spectrometry. He is a member of DOE's Advisory Panel on Accelerator Radiation Safety and is a member of the National Nuclear Data Center's Panel on Reference Nuclear Data.

O'Brien has also received the American Nuclear Society Radiation Protection and Shielding Division's Outstanding Service Award, and is a Fellow, American Nuclear Society. He succeeds *James McLaughlin*, who retired from DOE and is now associated with the University of California in Los Angeles.

The board of directors of Southern Science Applications, Inc., Dunedin, Florida has elected *Thomas E. Albert* Vice President of Corporate Development. Prior to this appointment, Albert was deputy division manager with Science Applications, Inc., of La Jolla, California.

A distinguished radiologist and pioneer in nuclear medicine, *Dr. Eugene L. Saenger* of Cincinnati, has been named as the 1982 Taylor Lecturer for the Annual Meeting of the National Council on Radiation Protection and Measurements. The lecture, a featured presentation of the NCRP Annual Meeting (see **UPCOMING MEETINGS** for further program details), is scheduled for 5 p.m. on April 6 in the auditorium of the National Academy of Sciences in Washington. Dr. Saenger, a renowned expert on radiation bio-effects, is the Vice Chairman of Radiology at the University of Cincinnati and Director of the Radioisotope Laboratory there which bears his name. He has been a member and Director of the NCRP, has served on numerous government advisory committees, has participated in study groups for the National Academy of Sciences and the Pan American Health Organization, and has a substantial bibliography in the areas of radiation effects, radiation therapy, and nuclear medicine. He is a graduate of Harvard University and of the University of Cincinnati.

#### VISITORS TO EPIC

The following persons came for an orientation visit and/or to use EPIC facilities during the month of January: *Suely M. Machado Carvalho*, from the Instituto de Radioproteção e Dosimetria, Rio de Janeiro, Brazil; *Helen McCallie*, of the International Atomic Energy Agency, Vienna, Austria; and *Daniel E. Eisenberg*, Assistant Director, Technology Transfer Data Systems Group, Franklin Research Center, Philadelphia, Pennsylvania.

#### UPCOMING MEETINGS

**Fourth ASTM-EURATOM Symposium on Reactor Dosimetry** The preliminary program for the Fourth American Society for Testing and Materials-EURATOM Symposium on Reactor Dosimetry to be held March 22-26, 1982 has been announced. The symposium, to be held at the National Bureau of Standards, Gaithersburg, Maryland, is sponsored by ASTM Committee E-10, the Joint Research Center of the Commission of European Communities, Nuclear Regulatory Commission, Department of Energy, Electric Power Research Institute, National Bureau of Standards, and International Atomic Energy Agency. The theme of the symposium is radiation metrology techniques, data bases, and standardization. Emphasis will be on the application and requirements for radiation metrology of irradiated fuels and materials in fission and fusion technology.

Papers encompass the following topics involving light water reactors, fast breeder reactors, and fusion reactors:

- Characterization of Environments
- Irradiation Monitoring of Experiments
- Adjustment Codes and Uncertainties
- Benchmark Fields and Calibration Procedures
- Nuclear Data Needs and Problems
- Metrology Techniques (new developments and improvements)
- Radiation Damage Correlations and Damage Analysis Techniques
- Nuclear Heating and Gamma Ray Dosimetry
- Neutron and Gamma Ray Transport Calculations
- LWR Surveillance Dosimetry.

Through the courtesy of the Nuclear Regulatory Commission, simultaneous interpretations will be provided between French and English and between German and English.

The symposium is organized as follows:

**ASTM Symposium Committee** - *W. M. McElroy* (Chairman) and *F.B.K. Kam* (Vice-Chairman)

**ASTM Program Committee** - *F.B.K. Kam* (Chairman), *E. B. Norris* (Co-Chairman), *J. Schmotzer* (Secretary), *C. M. Eisenhower* and *J. A. Grundl* (Local Arrangements Chairmen)

**Members** - *S. L. Anderson* (Westinghouse, USA); *C. D. Bingham* (US-DOE, New Brunswick Lab, USA); *A. M. Fabry* (CEN/SCK, Belgium); *J. R. Hawthorne* (NRL, USA); *F. Hegedus* (Swiss Federal Institute for Reactor Research, EIR, Switzerland); *B. A. Magurno* (BNL, USA); *E. D. McGarry* (NBS, USA); *F. J. Rahn* (EPRI, USA); *A. Sekiguchi* (University of Tokyo, Japan); *C. Z. Serpan* (NRC, USA); *F. W. Stallmann* (University of Tennessee and ORNL, USA); *H. Tourwe* (SCK/CEN, Belgium)

**Ex-Officio/Liaison Members** - E-10 Committee and Subcommittee Chairmen

**European Symposium Committee** - *J. P. Genthon* (Chairman), *W. Schneider* (Vice-Chairman), *J. Röttger* (Scientific Secretary)

**Members** - *R. Dierckx*, *A. Fabry*, *A. Fudge*, *P. Mas*, *M. Petilli*, *S. Wright*, and *W. Zijp*

#### **Workshop Titles and Chairmen**

**Adjustment Codes and Uncertainties:** *F. W. Stallmann* (ORNL) and *W. L. Zijp* (PETTEN).

**Nuclear Data and Benchmarks:** *B. Magurno* (BNL) and *A. Fabry* (MOL).

**LWR Surveillance and Dosimetry:** *A. Lowe* (B&W) and *H. Tourwe* (MOL).

**Neutron Transport and Calculations:** *R. E. Maerker* (ORNL) and *M. Austin* (U.K.).

The abstract deadline is closed and the final paper deadline is March 19. For further information please contact *J. K. Schmotzer*, Babcock & Wilcox, Lynchburg Research Center, P.O. Box 1260, Lynchburg, VA 24505; or *H. Röttger*, Joint Research Centre, Petten Establishment, HFR Division, Postbus 2, 1755 ZG PETTEN (N.H.), The Netherlands.

A registration fee of \$75, charged to all attendees to help defray the costs of conducting the symposium (checks made payable to "Reactor Dosimetry," no purchase orders, please) should be sent to *Mrs. Kathy C. Stang*, Materials Building, B348, National Bureau of Standards, Washington, D.C. 20234. Registration will be held at the Holiday Inn of Bethesda from 7-9 p.m., Sunday, March 21, and beginning at 8:30 a.m. on Monday, March 22, at the National Bureau of Standards.

**Program for Annual Meeting of the NCRP Announced** The National Council on

Radiation Protection and Measurements (NCRP) has released the provisional program for the 1982 Annual Meeting. The two day meeting of the NCRP will be held April 6-7, 1982 in the Auditorium of the National Academy of Sciences, 2100 Block of C Street, N.W., Washington, D.C.

The Scientific Session, titled "Radiation Protection and New Medical Diagnostic Approaches," is scheduled for April 6. The topics and speakers for the session, chaired by *Charles B. Meinhold*, include the following:

**Introduction,** *Warren K. Sinclair*;

**Radiation Protection and New Medical Diagnostic Approaches,** *Charles B. Meinhold*;

**Bureau of Radiological Health Responsibilities in Medical Radiation,** *John C. Villforth*;

**Basic Principles in Choosing Diagnostic Tests - Decision Analysis,** *Lee B. Lusted*;

**New Approaches to Choosing Diagnostic Tests - Radiological Diagnostic Experience,** *Robert D. Moseley, Jr.*;

**New Approaches to Choosing Diagnostic Tests - Design of Studies to Choose Among Modalities,** *Dennis G. Fryback*;

**New Approaches to Choosing Diagnostic Tests - Image Content,** *A. Everette James*;

**Panel Discussion,** *John C. Villforth*, *Lee B. Lusted*, *Robert D. Moseley, Jr.*, *Dennis G. Fryback*, and *A. Everette James*;

**New Approaches to Dose Reduction,** *Joel E. Gray*;

**Computed Tomography - Dose to the Patient,** *J. Thomas Payne*;

**Digital Radiography,** *Joachim F. Seeger*;

**Position Emission Tomography,** *David Kuhl*;

**Nuclear Magnetic Resonance,** *Thomas F. Budinger*;

**Ultrasound,** *Raymond Gramiak*.

The sixth Lauriston S. Taylor Lecture on Radiation Protection and Measurements will be presented by *Dr. Eugene L. Saenger* at 5:00 and will be followed by a reception in his honor in the Great Hall of the Academy.

The tentative schedule for April 7 includes the following: NCRP Business Meeting, Scientific Briefings, Current Topics, and Current NCRP Committee Activities.

#### **Nuclear and Space Radiation Effects**

The 1982 IEEE Annual Conference on Nuclear and Space Radiation Effects will be held July 20-22 in Caesar's Palace, Las Vegas, Nevada. The conference is sponsored by the IEEE/NPSS Radiation Effects Committee in cooperation with the University of Nevada-Las Vegas; and cosponsored by the Defense Nuclear Agency/DoD and Sandia National Laboratories/DOE. This conference will cover nuclear and space radiation effects and electromagnetic pulse effects on electronic devices, materials, circuits, and systems, as well as semiconductor processing technology and techniques for producing radiation tolerant (hardened) devices, integrated circuits, and memories.

The technical program will consist of six to eight sessions, including invited and contributed papers in oral and poster sessions. Papers describing significant findings in the following or related areas are solicited: basic radiation effects mechanisms for materials and devices; space radiation effects and space craft charging; radiation transport, energy deposition, dosimetry, and radiation facilities; manufacturing technology for radiation-hardened electronic devices, integrated circuits, and systems; radiation effects on electronic devices and components; radiation effects on integrated circuits and systems; single event phenomena; hardness assurance technology and testing techniques; electromagnetic pulse phenomena (EMP, IEMP, SGEMP); electromagnetic pulse coupling assessment and measurement technology; radiation-hardened instruments for nuclear power plants; and new developments and technologies of interest to the nuclear and space radiation effects community. Deadline for 2-4 page summary: March 15, 1982. Send to Technical Program Chairman K. F. Galloway, TECH B344, National Bureau of Standards, Washington, D.C. 20234; phone 301/921-3541.

The Conference will be preceded by a tutorial Short Course on Radiation Effects on July 19, covering nuclear and space radiation effects, and EMP effects, on electronic devices, materials, circuits and systems; design of and processing technology for producing radiation-tolerant (har-

dened) semiconductor devices, integrated circuits, LSI and VLSI microcircuits; and radiation sources, simulation, energy deposition, and dosimetry. An extensive social and family program is also planned.

The Registration fee is \$100 for IEEE members, \$125 for nonmembers; the short course is \$75. For complete conference information and registration material contact either General Chairman J. L. Ramsey, Code 605, Naval Weapons Support Center, Crane, Indiana 47522, phone (802) 854-1854 or Publicity Chairman Agustin Ochoa, Jr., Sandia National Laboratories, Division 2144, Albuquerque, New Mexico 87185, phone (505) 844-6648 or (505) 844-2150 (secretary).

**Environmental Compliance Group Upcoming Program** A program titled -The Regulations Governing the Transportation of Radioactive Materials Including Emergency Response & Packaging & Shipping of Low Level Radioactive Wastes,- will be held on March 23-24, 1982, at the Holiday Inn of Saddle Brook, New Jersey. The program will be conducted by Ermes DeMaria. Further details may be obtained from ECG, Inc., P.O. Box 729, Upper Montclair, New Jersey 07043, phone (201) 785-8450, 8451.

**Technology and Technology Exchange** The International Congress on Technology and Technology Exchange (Fifth Congress of International Technology) will be held May 3-6, 1982 at the David L. Lawrence Convention/Exposition Center in Pittsburgh, Pennsylvania concurrently with Technomart '82. The Congress is sponsored by the International Technology Institute, Engineers' Society of Western Pennsylvania, and the U.S. Department of Commerce-International Trade Administration. For further information write or call Technomart, 7125 Saltsburg Road, Pittsburgh, PA 15235; phone (412) 795-5300.

**ANS Annual Meeting** The American Nuclear Society Annual Meeting will be held June 6-11, 1982 at the Los Angeles Bonaventure Hotel in Los Angeles, California. For additional information contact Larry Klein, Chairman, NUS Corporation, 14011 Ventura Blvd., Suite 401, Sherman Oaks, CA 91423; phone (213) 783-0254.

**Conference on Nuclear Data for Science and Technology** The Fourth International Conference on Nuclear Data for Science and Tech-

nology is to be held September 6-10, 1982, at the Universitaire Instelling Antwerpen (UIA), in Antwerp, Belgium. It is sponsored by the European Physical Society, the Universitaire Instelling Antwerpen, the International Union of Pure and Applied Physics, and the city of Antwerp with the co-operation of the OECD Nuclear Energy Agency Nuclear Data Committee and the International Atomic Energy Agency. The conference is being organized by the Central Bureau for Nuclear Measurements, Commission of the European Communities (CEC) Teenweg naar Retie, B-2440 Geel, Belgium, Telephone: 014-589421; Telex: 33589 Eurat B. Inquiries may be sent to the above address for the attention of Mrs. Faes, Secretariat Antwerp Conference. K. H. Bockhoff (C.E.C.) is Chairman.

#### JANUARY 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.*

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

#### REACTOR AND WEAPONS RADIATION SHIELDING LITERATURE

**AERE-M-3195** The Response of Silicon Diodes to  $^{252}\text{Cf}$  Neutrons Before and After Annealing., . . Delafield, H.J.; Myers, K.J., . . April 1981, . . UKAEA Atomic Energy Research Establishment, Harwell, Environmental and Medical Sciences Div.

**AERE-M-3196** Silicon Diode Measurements for Monoenergetic Neutrons and Critical Assemblies (H.P.R.R. and VIPER), . . Delafield, H.J.; Reading, A.H., . . April 1981, . . UKAEA Atomic Energy Research Establishment, Harwell, Environmental and Medical Sciences Div.

**AERE-R-9995** Code of Practice and Design Principles for Portable and Transportable Radiological Protection Systems., . . Wells, F.H.; Powell, R.G., . . October 1980, . . NTIS (U.S. Sales Only), PC A06/MF A01

**AERE-R-10020** Gamma-Rays from an Unirradiated Plutonium-Uranium Oxide Fuel Pin and a Method of Measuring the Age of Plutonium Since Chemical Processing., . . West, D.; Sherwood, A.C., . . March 1981, . . UKAEA Atomic Energy Research Establishment, Harwell, Nuclear Physics Div.

**ANL-81-75** Neutronic Analysis of the Three Mile Island Unit 2 Ex-Core Detector Response., . . Malloy, D.J.; Chang, Y.I., . . October 1981, . . NTIS, PC A03/MF A01

**BNL-NCS-30130; CONF-810957-4** Some Highlights in the Evaluations of the Thermal Cross Sections and Resonance Parameters of the Actinides., . . Mughabghab, S.F.; Divadeenam, M., . . 1981, . . NTIS, PC A03/MF A01, . . Portions of document are illegible.

**CEA-CONF-5522; CONF-8009224-2** Application of Sensitivity Studies to Actinide Build-Up Problems., . . Estiot, J.C.; Palmiotti, G.; Salvatores, M., . . September 1980, . . CEN Saclay, Service de Documentation, 91191 Gif-sur-Yvette Cedex, France

**CEA-CONF-5523; CONF-8009224-3** Blanket Studies at CEA: Status of the Art., . . Salvatores, M., . . September 1980, . . NTIS (U.S. Sales Only), PC A02/MF A01

**CEA-N-2165 (In French); Thesis (In French)** Approximate Solutions for the Two-Dimensional Integral Transport Equation. Solution of Complex Two-Dimensional Transport Problems., . . Sanchez, R., . . November 1980, . . NTIS (U.S. Sales Only), PC A15/MF A01

**CEA-N-2169 (In French)** Use of Angular Finite Elements for the Numerical Analysis of Transport Equation., . . Lecot, C., . . July 1980, . . NTIS (U.S. Sales Only), PC A09/MF A01

**CEGB-RD/B/N-4942** UKFPDD-2: A Revised Fission Product Decay Data File in ENDF/B-IV Format., . . Tobias, A.; Davies, B.S.J., . . November 1980, . . NTIS (U.S. Sales Only), PC A03/MF A01

**CEGB-RB/B/N-4949** Decay Heat Summation Calculations Using UKFPDD-2., . . Tobias, A., . . November 1980, . . NTIS (U.S. Sales Only), PC A02/MF A01

**CONF-801082-6** Experimental Validation of Monte Carlo Calculations for Organ Dose., . . Yalcintas, M.G.; Eckerman, K.F.; Warner, G.G., . . 1980, . . NTIS, PC A02/MF A01

**CONF-810975-1** Beta and Gamma Decay-Heat Measurements for Fast and Thermal Reactors, Particularly for Pu-239., . . Dickens, J.K., . . 1981, . . NTIS, PC A02/MF A01

**CONF-811103-48** Gain from a Mixed Finite-Difference Formulation for Three-Dimensional Diffusion-Theory Neutronics., . . Vondy, D.R.; Fowler, T.B., . . 1981, . . NTIS, PC A02/MF A01

**CONF-811103-56** Comparison of Calculations with Neutron Dosimetry Measurements Performed at the Oak Ridge Poolside Facility., . . Maerker, R.E.; Williams, M.L., . . 1981, . . NTIS, PC A02/MF A01

**CTA-EAV-023/80 (In Portuguese)** Sensitivity Analysis of the U-238 Cross Sections in Fast Nuclear Systems - Program SENSEAV-R., . . do Amorim, E.S.; D'Oliveira, A.B.; de Oliveira, E.C.; de Moura Neto, C., . . 1980, . . NTIS (U.S. Sales Only), PC A02/MF A01

**DNA 5793F-2** Calculation of the Neutron and Gamma-Ray Environment in and Around the AFRRI TRIGA Reactor. Volume II., . . Verbinski, V.V.; Cassapakis, C.G., . . June 1, 1981, . . Science Applications, Inc., P.O. Box 2351, La Jolla, California 92038

**DOE/EML-394** A Manual for BON: A Code for Unfolding Multisphere Spectrometer Neutron Measurements., . . Sanna, R.S., . . August 1981, . . NTIS

**DOE/ER/10353-3** Computational Methods for the Nuclear- and Neutron-Matter Problems. Progress Report., . . Kalos, M.H., . . 1981, . . NTIS, PC A02/MF A01

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ress Report, FY 1981., . . Stacey, W.M., Jr., . . April 1981, . . NTIS

**DOE/R5/10248-T1** Earth-Sheltered Industrial Utility Park. Final Report., . . Cumberland Development Corp., WI, . . April 1981, . . NTIS

**EPRI NP-2149** Corrosion-Product Transport in PWR Secondary Systems., . . Sawochka, S. G.; Copley, S.E.; Pearl, W.L., . . December 1981, . . Research Reports Center (RRC), Box 50490, Palo Alto, CA 94303, (415) 965-4081

**EUR-6264** Information and Training on Radiation Protection for Trade Union Representatives from the Nine Member States of the European Communities., . . Commission of the European Communities, Luxembourg. Directorate for Health Protection, . . 1979, . . NTIS, PC A07/MF A01

**EUR-7148** Monte Carlo Calculation of Sensitivity Coefficients., . . Matthes, W., . . 1981, . . NTIS (U.S. Sales Only), PC A03/MF A01

**FOA-C-20402 (In Swedish)** Calculation of the Radiation Shielding of Some Dwelling-Houses Against Remaining Activity., . . Danielson, G., . . March 1981, . . NTIS (U.S. Sales Only), PC A02/MF A01

**HEDL-SA-2426; CONF-811040-115** Radiation Shielding Issues on the FMIT., . . Burke, R.J.; Davis, A.A.; Huang, S.; Morford, R.J., . . May 1981, . . NTIS, PC A02/MF A01

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**IAEA-RL-68** Compilation of Neutron Flux Density Spectra and Reaction Rates in Different Neutron Fields. Vol. 3., . . Ertek, C., . . April 1980, . . NTIS (U.S. Sales Only), PC A17/MF A01

**INIS-mf-4645, pp. 8-12 (In Russian)** On the Effect of Thin Layers of Structural Material on the Albedo of Flat Isotopic and Flat Monodirectional Cesium Sources., . . Solov'ev, A.M.; Terent'ev, B.M.; Shugaev, B.M., . . 1975, . . Vsesoyuznyj Nauchno-Issledovatel'skij Inst. Radiatsionnoj Tekhniki, Moscow (USSR)

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**INIS-mf-6692 (In German)** Radiation Protection in Civil Defense., . . Ahlborn, K., . . No Date, . . NTIS (U.S. Sales Only), PC A04/MF A01

**INIS-SU-5 (In Russian)** Problems on Dosimetry and Radiation Protection. No. 17., . . Baranov, V.F. (Ed.), . . 1978, . . NTIS (U.S. Sales Only), PC A08/MF A01

**IPP-4/199** Parametric Analyses of Fusion-Fission Systems., . . Raeder, J., . . May 1981, . . Max-Planck-Institut fuer Plasmaphysik, Garching (Germany, F.R.)

**JAERI-M-8870 (In Japanese)** Cross Section Sensitivity Analysis of  $^{235}\text{U}$  and  $^{238}\text{U}$  Fission Rates in a Graphite Reflected Lithium Oxide Assembly., . . Oyama, Y.; Seki, Y.; Maekawa, H.; Nakamura, T., . . May 1980, . . NTIS (U.S. Sales Only), PC A02/MF A01

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