



RSIC Newsletter

Oak Ridge National Laboratory

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Human history is, in essence, a history of ideas.—H. G. Wells

In Memory — Francis H. Clark — 1924–1993

Francis (Frank) H. Clark, physicist, an early RSIC research staff member, died of cancer at his Florida home June 28, 1993. He will be remembered by long-term RSIC participants as the initiator, collector, and editor of the “Current Work and Problems” feature of the *RSIC Newsletter* published through the early 1970's. He also established and served as the first chairman of the Shielding Subcommittee of the national Cross Section Evaluation Working Group (CSEWG).

Frank came to the Oak Ridge National Laboratory (ORNL) via nuclear industry research “Think Tanks” in August 1962, at the beginning of the fiscal year in which RSIC was established. He was first associated with reactor (SNAP, etc.) shielding research in the ORNL Neutron Physics Division, working with teams (F. B. K. Kam, *et al*) involved in developing and using Monte Carlo (O5R, O6R) and other computer techniques for studies of deep penetration in lithium hydride and other shielding problems.

Frank became interested in the “information analysis center” concept as formulated in RSIC and its application in other specialized technical fields. Encouraged by his wife, Dr. Elsie Tomkinson Clark, a physician, and Dr. A. Bertrand Brill, a nuclear medicine specialist in the Vanderbilt Medical Center in Nashville, he became involved in studies related to the use of computers in a medical clinical environment. He was instrumental in the founding of the DOE-sponsored RSIC spin-off, Biomedical Computing Technology Information Center (BCTIC) and of the Computer Council of the Society of Nuclear Medicine.

Frank concluded his professional career in the ORNL Instrumentation and Controls Division, retiring February 29, 1988. He is survived by his wife (710 Seventeenth St., S.W., Vero Beach, Florida), his daughter Karen Hasenauer of Oak Ridge, Tennessee, and four sons: Douglas and Bruce of Albuquerque, New Mexico, Charles of Fayetteville, Arkansas, and Andrew of Vero Beach, Florida.

Betty F. Maskewitz

ANS Professional Division Election Results

The results of the 1993–94 professional division elections of interest to RSIC readers are as follows.

- Biology and Medicine**—Alan J. Blotcky, chair; Charles C. Thomas, Jr., vice chair; Tim Z. Hossain, secretary/treasurer. Executive Committee: Donald A. Becker, Amares Chatt, Robert R. Greenberg, Vincent P. Guinn, Sheldon Landsberger, Lori J. Powell, Louis R. Todisco, and M. Güven Yalcintas.
- Education and Training**—Barclay G. Jones, chair, George D. Dooley, vice chair; David Woodall, secretary/treasurer. Executive Committee: Yves J. Chelet, Lawrence B. Durham, Jane L. Eggers, Joseph K. Gasper, Edward H. Klevans, Albert M. Mangin, William R. Martin, and Leon West, Jr.
- Environmental Sciences**—David W. Hayes, chair; Wanda I. Munn, vice chair; Gary L. Krieger, secretary; Robert J. Gehrke, treasurer. Executive Committee: Robert P. Addis, Linda R. Bauer, James Blackburn, Kitty R. Gandee, William A. Jester, William E. Kennedy, Jr., Robert Lorenz, Robert W. Myers, and Donald F. Schutz.
- Fuel Cycle and Waste Management**—A. Scott Dam, chair; Dillard B. Shipler, vice chair; Linda M. Ulland, secretary/treasurer. Executive Committee: Susan G. Bilhorn, Donald E. Clark, David M. Dawson, Martin N. Haas, Nancy E. Rothermich, Thomas R. Stevens, Peter Stevens-Guille, Morton E. Wacks, and Walt H. Wolf.
- Fusion Energy**—Ralph W. Moir, chair; Ronald L. Miller, vice chair; Paul J. Gierszewski, secretary/treasurer. Executive Committee: Robert F. Bourque, John W. Davis, Charles A. Flanagan, Mohamed Y. Gohar, David B. Harris, Wayne A. Houlberg, Wayne R. Meier, Dale L. Smith, and Mark S. Tillack.
- Mathematics and Computation**—Bradley A. Clark, chair; R. Arthur Forster, vice chair; Marvin L. Adams, secretary; Michael S. Milgram, treasurer. Executive Committee: Yousry Y. Azmy, Dan G. Cacuci, Yung-An Chao, J. Michael Doster, Elmer E. Lewis, Warren F. Miller, Jr., James A. Rathkopf, Richard Sanchez, and Jasmina L. Vujic.
- Nuclear Criticality Safety**—Donna M. D'Aquila, chair; Robert D. Busch, vice chair; Valerie L. Putman, secretary; Richard E. Anderson, treasurer. Executive Committee: Douglas W. Croucher, Denelle E. Friar, David J. Lindenschmidt, John S. Pearson, John A. Schlessler, Robert L. Seale, Hans Toffer, Dennis A. Tollefson, and Michael J. Vehec.
- Nuclear Reactor Safety**—George F. Flanagan, chair; Mario H. Fontana, vice chair; Annick Carnino, secretary/treasurer. Executive Committee: David D. Carlson, Douglas W. Croucher, William T. Hancox, John R. Ireland, Wayne K. Lehto, C. Frederick Sears, David Squarer, Thomas E. Tipton, Edward A. Warman, and Norman Weber.
- Radiation Protection and Shielding**—William T. Urban, chair; Lee L. Carter, vice chair; James H. Renken, secretary; Richard M. Rubin, treasurer. Executive Committee: Donald J. Dudziak, Ward W. Engle, Jr., Guy P. Estes, Donald R. Harris, Jr., Andrew D. Hodgdon, Gerald P. Lahti, Eugene Normand, John W. Poston, and Robert W. Roussin.
- Reactor Physics**—Alberto L. Casadei, chair; Dimitrios Cokinos, vice chair; Dan G. Cacuci, secretary; Thomas J. Downar, treasurer. Executive Committee: Carol A. Atkinson, Michaele C. Brady, David J. Diamond, Ray G. Gamino, Mark L. Kantrowitz, Mickey R. Killgore, Dale B. Lancaster, William F. Naughton, Theodore A. Parish, and John M. Ryskamp.

CHANGES TO THE COMPUTER CODE COLLECTION

Two changes were made to the computer code collection during month. A new code system was packaged and added to the collection and an existing code package was replaced with a newly frozen version.

CCC-619/SCALE-PC

Oak Ridge National Laboratory has contributed a new hardware version of the SCALE modular code system for performing computer analyses for licensing evaluation. The new personal computer release has the capability to perform criticality safety analyses using well established functional modules tailored to the SCALE system. SCALE-PC includes functional modules BONAMI, NITAWL-II, XSDRNPM, ICE, and KENO-V.a, as well as the CSAS control module. The modules are functionally equivalent to those in the CCC-545/SCALE4.1 release. The OFFSCALE program is included to assist in preparing an input file for any of the criticality sequences contained in the CSAS module. SCALE-PC runs on either 80386 or 80486 personal computers equipped with a math coprocessor and 4 MB extended memory. A 486 PC with at least 8 MB of extended memory is recommended. Nominal hard disk requirements are around 40 MB to install the executables and data files and run the sample cases with around another 50 MB required to compile and link the source files. The executables included in the package were created with the Lahey F77L/EM32 Fortran compiler, Version 5.01, and the Phar Lap Dos Extender and virtual memory manager under DOS 5.0. The package is transmitted on seven DS/HD 3.5-in. 1.44 MB diskettes written in DOS compressed format. Fortran 77; PC 386 or 486 (C00619/PC486/00).

PSR-171/NJOY91.76

Los Alamos National Laboratory, Los Alamos, New Mexico, has contributed a newly frozen

version of this code system for producing pointwise and multigroup cross sections from ENDF/B evaluated nuclear data, including ENDF/B-VI. NJOY91 can work with neutrons, photons, and charged particles and can produce libraries for a wide variety of particle transport and reactor analysis codes. This new release, designated NJOY91.76, includes bug fixes, improvements in several modules, and some new capabilities. Information on the changes is included in the README file.

Some of the major changes include the following: UP62 fixes GROUPE to handle multiple emissions in file 6 for the ENDF/B-VI material F-19; UP64 fixes problems with the photon production in the MATXS files with bad $mt50+n$ gamma yields to correct an error in UP30; UP68 fixes Monte-Carlo processing to handle all the energy-angle formats in ENDF/B-VI; and UP69 fixes the Reich-Moore problem, correcting an error in UP2.

The code runs on Cray/UNICOS, Cray/CTSS, IBM, VAX/VMS, and Sun workstations. The package is transmitted on either 1 DC 6150 (150 MB) cartridge or 8mm tape in TAR format or on 4 DS/HD (1.2 MB) diskettes in compressed mode to be read by DOS. References: Unpublished document (February 1991), LA-12057-MS (March 1991), LANL Memo T-2-L-10991 (June 1987), LA-9303-M (ENDF-324), Vol. I (May 1982), Vol. II (May 1982), Vol. III (October 1987), Vol. IV (December 1985), LA-UR 89-2057 (June 1989), LANL Memo T-2-L-10991 (June 1987), and Informal documents (April 1992 and May 1992). Fortran 77; Cray (CTSS & UNICOS), VAX/VMS, SUN/UNIX (P00171/MFMWS/01).

CHANGE TO THE DATA LIBRARY COLLECTION

An existing data library package was corrected during the month.

DLC-129/ANS643

A correction has been made to this library of geometric progression gamma-ray buildup factor coefficients. The National Institute of Standards and Technology, Gaithersburg, Maryland, identified the typographical error in the file PALLAS.BF. The entry for lead (Exposure Build Up Factor) that should be 0.1MeV was erroneously entered as 0.01. The package is transmitted on one DS/HD (1.2MB) 5.25-in. diskette in DOS format. References: Informal Notes (July 1990); ANS ISBN: 0-89448-132-0 (April 1987); *J. Nucl. Sci. Technol.* 21[1], 78-84; and ORNL/RSIC-49/R1 (August 1991). IBM PC (D00129/IBMPC/02).

Calendar

Your attention is directed to the following events of interest.

August 1993

SMiRT 12, Structural Mechanics in Reactor

Technology, Aug. 15–20, 1993, Stuttgart, Germany. Contact: Prof. Karl Kussmaul, SMiRT 12, Stätliche Materialprüfungsanstalt (MPA), University of Stuttgart, Pfaffenwaldring 32, 7000 Stuttgart 80 Germany (phone 49-711-685-3582; Fax 49-711-685-3144 or 2635).

16th Reactor Operations International Topical

Meeting, Aug. 16–19, 1993, Long Island, New York. Contact: Robert McNair, Brookhaven National Laboratory, Reactor Division, Bldg. 703, Upton, NY 11973 (phone 516-282-2270, Fax 516-282-3014).

Occupational & Environmental Radiation Protection,

Aug. 16–20, 1993, Boston, Massachusetts, a short course offered by Harvard School of Public Health. Contact: Mary F. McPeak, Assoc. Dean for Continuing Education, 677 Huntington Ave., Boston, MA 02115 (phone 617-432-1171; Fax 617-432-1969).

10th National Symposium on Radiation Physics

(*NSRP-10*), Aug. 17–20, 1993, Kalpakkam, India. Contact: Dr. Baldev Raj, Head, DPEND, Indira Gandhi Centre for Atomic Research, Kalpakkam, Tamil Nadu 603 102, India.

3rd European Space Power Conference, Aug. 23–27,

1993, Graz, Austria. Contact: J. Sanchez-Michielsen, ESTED, Power and Energy Conversion Division, P.O. Box 299, NL-2200 AG Noordwijk, The Netherlands (Fax 31-1719-84994).

8th ASTM-EURATOM Symposium on Reactor

Dosimetry, Aug. 29–Sept. 3, 1993, Vail, Colorado. Contact: Patrick J. Griffin, Div. 6522, Sandia National Laboratories, Albuquerque, New Mexico 87185 (phone 505-845-9121).

Topical Meeting on Environmental Transport and

Dosimetry, Aug. 31–Sept. 3, 1993, Charleston, South Carolina, sponsored by the ANS. Contact: Robert Addis, Savannah River Laboratory, Environmental Transport Group, Bldg. 773-A, Box 616, Aiken, SC 29808 (phone 803-725-3325).

3rd European Conference on Accelerators in Applied

Research and Technology, Aug. 31–Sept. 4, 1993, Orleans, France. Contact: J. L. Debrun, CNRS,

Centre d'Etudes et de Recherches par Irradiation, 3A rue de la Ferrollerie, F-45071 Orleans Cedex 2, France (fax 38-63-0271).

September 1993

Environmental Transport and Dosimetry, an ANS

Topical Meeting, Sept. 1–3, 1993, Charleston, South Carolina. Contact: Roy Rathbun, P.O. Box 42, New Ellenton, SC 29809 (phone Roy at 803-644-6967 or Bill Hennessy at 803-641-0420).

Computational and Experimental Validation of Nuclear

Power Safety and Fuel Cycle Investigations, Sept. 5–9, 1993, Moscow, Russia. Contact: Prof. V. V. Khromov, Moscow Engineering Physics Institute, Kashirskoe Shosse 31, Moscow, 115409, Russia (phone 095-324-7026, Fax 095-324-2111).

Radiation Transport Calculations Using the EGS4

Monte Carlo System, Sept. 6–10, 1993, a hands-on course offered by the National Physical Laboratory, Teddington, Middlesex, United Kingdom TW11 0LW (phone 081-977-3222, Fax 081-943-2155).

2nd European Conference on Radiations and Their

Effects on Devices and Systems, Sept. 13–16, 1993, Saint-Malo, France. Contact: CEA-DAM, Service Electronique, BP 12, F-91680 Bruyeres, Le Chatel, France.

Radiation Transport Calculations Using the EGS4

Monte Carlo System, Sept. 6–10, 1993, sponsored by the National Physical Laboratory, Middlesex, United Kingdom. Contact: Dr. Simon Duane, Div. of Radiation Science and Acoustics, National Physical Laboratory, Queens Road, Teddington, Middlesex, UK TW11 0LW (phone 081-977-3222 Ext 6568, fax 081-943-6161).

2nd International Conference on Computational

Physics, Sept. 13–17, 1993, Beijing. Contact: Prof. Tian-Yuan Zhang, IAPCM, P.O. Box 8009, Beijing, P.R. China 100088 (Fax 011-86-1-201-0108).

Physics and Methods in Criticality Safety, a topical

meeting of the Nuclear Criticality Safety Division of the American Nuclear Society, Sept. 19–23, 1993, Nashville, Tennessee. Contact: R. Michael Westfall, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6370 (phone 615-576-3513), or Dennis Tollefson, Y-12 Plant, P.O. Box 2009, Oak Ridge, TN 37831-8221 (fax 615-574-2000).

MCNP4A, SABRINA, and 3Dviewer Graphics on the

PC, Sept. 27–28, 1993, Gaithersburg, Maryland, a

short course conducted by Experimental and Mathematical Physics Consultants, P.O. Box 3191, Gaithersburg, MD 20885 (phone 301-869-2317).

Radioactive Waste Volume Reduction, Sept. 27–29, 1993, Chicago, Illinois. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Introduction to Radiation Protection, Sept. 27–Oct. 1, 1993, Cambridge, Massachusetts, a five-day course conducted by Arthur D. Little, Inc. Contact: David J. Allard, Arthur D. Little, Inc., 20 Acorn Park, Cambridge, MA 02140 (phone 617-498-6101, fax 617-498-7161).

Environmental Effects of Nuclear Power: Calculation and Control, Sept. 28–Oct. 1, 1993, Chicago, Illinois. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Workshop on Data Analysis in Quality Control and in Radiation Protection of the Patient in Diagnostic Radiology and Nuclear Medicine, Sept. 29–Oct. 1, 1993, Grado, Italy. Contact: Dr. G. Contento, Ospedale Santa Maria della Misericordia, Piazza Santa Maria della Misericordia 15, I-33100 la Loi 200, B-1049 Brussels, Belgium.

October 1993

12th International Conference on Non-Destructive Evaluation in the Nuclear and Pressure Vessel Industries, Oct. 3–7, 1993, Philadelphia, Pennsylvania. Contact: ASM International, Materials Park, OH 44073 USA (phone 216-338-5151; Fax 216-338-4634).

International Symposium on the Advanced Nuclear Power Systems: Design, Technology, and Strategies for Their Deployment, Oct. 18–22, 1993, Seoul, Korea. Contact: Conference Service Section, IAEA, P.O. Box 100, A-1400, Vienna, Austria.

Fall Meeting of the Division of Nuclear Physics of the American Physical Society, Oct. 20–23, 1993, Pacific Grove, California. Contact: D. V. R. Brown, Lawrence Livermore National Laboratory, Bldg. 181, L-288, P.O. Box 808, Livermore, CA 94550 (fax 510-423-8086).

Radiation Protection Engineering, Oct. 25–29, 1993, San Francisco, California. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

November 1993

Nuclear Energy Forum, Nov. 14–17, 1993, San Francisco, California. Contact: Conference Office,

USCEA, 1776 I Street NW, Suite 400, Washington, DC 20006-3708 (phone 202-293-0770, Fax 202-785-4113).

Effective Utilization of MCNP4A on the PC, Nov. 14–18, 1993, a short course conducted by Experimental and Mathematical Physics Consultants, P.O. Box 3191, Gaithersburg, MD 20885 (phone 301-869-2317).

Air Sampling, Nov. 16–19, 1993, Albuquerque, New Mexico. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

Radiation Contamination Risk: Communicating with the Public, Nov. 29–Dec. 3, 1993, Clearwater Beach, Florida. Contact: Woodson Assoc., Inc., P.O. Box 2665, Gaithersburg, MD 20886 (phone 301-990-0751, Fax 301-990-6153).

January 1994

11th Symposium on Space Nuclear Power Systems, Jan. 9–13, 1994, Albuquerque, New Mexico. Contact: Richard Johnson, Inst. of Space Nuclear Power Studies, University of New Mexico, Chemical and Nuclear Engineering Dept., Albuquerque, NM 87131-1341.

Reactor Physics and Reactor Computations, Jan. 23–26, 1994, Tel Aviv, sponsored by the Israel Nuclear Society and the European Nuclear Society. Contact: Dan Knassim Ltd., P.O. Box 57005, Tel Aviv 61570, Israel (phone 972-3-562-6470, Fax 972-3-561-2303).

February 1994

Managing Radioactive and Mixed Waste, Feb. 13–17, 1994, Albany, New York, sponsored by the Health Physics Society. Contact: John M. Matusek, NENYHPS, P.O. Box 2249, Empire State Plaza Station, Albany, NY 12220-2249.

1992 HEART Conference, Feb. 14–18, 1994, Monterey, California. Contact: Logicon/RDA, ATTN: 1994 HEART Conference, Mr. Ed. Quinn, 2100 Washington Blvd., Arlington, VA 22204-5706.

March 1994

11th International Conference on the Use of Computers in Radiotherapy, Mar. 20–24, 1994, Manchester, United Kingdom. Contact: J. M. Wilkinson, Christie Hospital, Withington, Manchester M20 9BX, GB.

April 1994

Methods and Applications of Radioanalytical Chemistry (MARC III), Apr. 10–16, 1994, Kona, Hawaii, an International Topical Conference of the

American Nuclear Society. Contact Prof. Roy H. Filby, Technical Program Chairman, Department of Chemistry, Washington State University, Pullman, WA 99164-4630 (phone 509-335-3331, fax 509-335-8867).

Topical Meeting on Advances in Reactor Physics, Apr. 11–14, 1994, Knoxville, Tennessee, sponsored by the American Nuclear Society. Contact: B. A. Worley, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6363 USA (phone 615-574-6106).

ARS '94, International Meeting on Advanced Reactor Safety, Apr. 17–20, 1994, Pittsburgh, Pennsylvania. Contact: D. Squarer, Westinghouse Electric Corp., Science and Technology Center, 1310 Beulah Road, Pittsburgh, PA 15235-5098 USA (phone 412-256-2063; fax 412-256-1348).

RECOD '94, 4th International Conference on Nuclear Fuel Reprocessing and Waste Management, Apr. 24–28, 1994, London. Contact: W. L. Wilkinson, RECOD '94 Steering Committee, British Nuclear Forum, 22 Buckingham Gate, London SW1E 6LB, United Kingdom. (phone 071-828-0116; fax 071-828-0110).

42nd Annual Meeting of the Radiation Research Society, Apr. 25–29, 1994, Nashville, Tennessee. Contact: Radiation Research Society, 1891 Preston White Drive, Reston, VA 22091.

May 1994

9th Pacific Basin Nuclear Conference, May 1–5, 1994, Sydney, Australia. Contact: Australian Nuclear Association, P.O. Box 445, Sutherland, NSW 2232, Australia.

International Conference on Nuclear Data for Science and Technology, May 9–13, 1994, Gatlinburg, Tennessee, USA. Contact: J. K. Dickens, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6356 USA (phone 615-574-6115).

1994 Symposium on Radiation Measurements and Applications, May 16–19, 1994, Ann Arbor, Michigan, the 8th in a series sponsored by the U.S. Department of Energy. Contact: Helen Lum, Symposium Secretary, 3034 Phoenix Memorial Laboratory, The University of Michigan, Ann Arbor, MI 48109-2100.

July 1994

18th International Radiation Physics Society, July 18–22, 1994, Rabat, Morocco. Contact: Pr. M. Berrada, Lab. de Physique Nucléaire, Faculté des Sciences, B. P. 1014 Rabat, Morocco (Fax 212-7-77-99-78).

October 1994

Fourth Conference on Radiation Protection and Dosimetry, Oct. 24–26, 1994, Orlando, Florida, sponsored by the Oak Ridge National Laboratory. Contact: J. S. Bogard, ORNL, P.O. Box 2008, Oak Ridge, TN 37831-6379 (phone 625-574-5851, fax 615-574-9174).

March 1995

5th Topical Meeting on Tritium Technology in Fission, Fusion, and Isotopic Applications, Mar. 26–31, 1995, Augusta, Georgia, sponsored by the ANS. Contact: C. E. Murphy, Westinghouse SRC, Savannah River Lab., Aiken, SC 29808.

JUNE 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 22161.

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.

RADIATION SHIELDING LITERATURE

Health Phys., 64, 638-646. . *A Monte Carlo Approach to Assessing ¹⁴⁷Pm in the Liver of the Adult Phantom.* . Bhati, S. . 06/93

Health Phys., 64, 647-652. . *Evaluation of an Alpha Probe Detector for In Vitro Cellular Dosimetry.* . Hui, T.E.; James, A.C.; Jostes, R.F.; Schwartz, J.L.;

Swinth, K.L.; Cross, F.T. . 06/93

Health Phys., 64, 680-681. . *Shielding for Beta-Gamma Radiation.* . Fletcher, J.J. . 06/93

Nucl. Sci. Eng., 114, 102-111. . *A Model for Fission Product Release from Liquid-Metal Pools:*

- Development and Sensitivity Investigation.* . McClure, P.R.; Leonard, M.T.; Razani, A. . 06/93
- Nucl. Sci. Eng., 114, 118-123.** . *Calculation of Recoil Ion Effective Track Lengths in Neutron-Radiation-Induced Nucleation.* . Harper, M.J. . 06/93
- Nucl. Sci. Eng., 114, 149-159.** . *Measurements and Calculations of Radionuclides Created by ^{181}Ta (γ, xn γp) Reactions for Bremsstrahlung Photons Produced by 150-MeV Electrons.* . Dickens, J.K.; Miller, M.A. . 06/93
- Nucl. Sci. Eng., 114, 160-167.** . *Analysis of ONEDANT Code Package for the Calculation of the Doppler Coefficient of Reactivity.* . Soares, I.; Miller, W.F.; Perry, R.T. . 06/93
- Nucl. Sci. Eng., 114, 87-101.** . *A Burnup-Compensated Madland-Nix Prompt Fission Neutron Source Term for Multigroup Nuclear Reactor Shielding Calculations.* . van Rooyen, T.J.; de Beer, G.P. . 06/93
- ECN-207.** . *The REAC-ECN-3 Data Library with Neutron Activation and Transmutation Cross-Sections for Use in Fusion Reactor Technology.* . Gruppelaar, H.; van der Kamp, H.A.J.; Kopecky, J.; Nierop, D. . 05/88
- ECN-89-181.** . *Evaluation of Cross-Sections and Uncertainties for Important Reactions - A supplement to the REAC-ECN-5 data file -.* . Kopecky, J.; van der Kamp, H.A.J. . 09/89
- EPA 430-R-02-011.** . *NESHAPS Rulemaking On Nuclear Regulatory Commission and Agreement State Licensees Other Than Nuclear Power Reactors, Background Information Document.* . 11/92
- INDC(NDS)-260.** . *FENDL-2 and Associated Benchmark Calculations.* Summary Report of the Advisory Group Meeting organized by the IAEA and held in Vienna, Austria, 18-22 November, 1991. . Pashchenko, A.B.; Muir, D.W. . 03/92
- KEK Report 90-18.** . *Annotated References of Shielding Experiment and Calculation of High Energy Particles.* . Hirayama, H.; Nakamura, T.; Ban, S.; Harima, Y.; Hayashi, K.; Hayashida, Y.; Ida, H.; Ishikawa, T.; Itou, D.; Katou, T.; Kawai, Y.; Kawabe, T.; Kawachi, K.; Kosako, T.; Kumagai, T.; Nakajima, H.; Namito, Y.; Ohtani, J.; Sakurai, N.; Sasamoto, M.; Shimizu, M.; Tanaka, S.; Tanaka, S.; Tsuji, M.; Uwamino, Y.; Yamano, N. . 12/90
- NASA TM 105708.** . *Space Nuclear Thermal Propulsion Test Facilities Sub-Panel Final Report.* . Allen, G.C.; Warren, J.W.; Martinell, J.; Clark, J.S.; Perkins, D. . 04/93
- NASA TM 105710.** . *Space Exploration Initiative Candidate Nuclear Propulsion Test Facilities.* . Baldwin, D.; Clark, J.S. . 04/93
- NEACRP-L-331.** . *NEACRP Comparison of Codes for the Radiation Protection Assessment of Transportation Packages. Solutions to Problems 1-4.* . Avery, A.F.; Locke, H.F., Mrs. . 03/92
- NEACRP-L-338.** . *NEACRP Comparison of Codes for the Radiation Protection Assessment of Transportation Packages. Solutions to Problems 5 and 6.* . Locke, H.F., Mrs. . 03/92
- NEACRP-L-339.** . *Summary of the Results of the Comparison of Calculations and Measurements for the TN12 Flask Carried Out Under the NEACRP Intercomparison of Shielding Codes.* . Locke, H. F., Mrs. . 03/92
- NISTIR 5177.** . *The ENDF/B-VI Neutron Cross Section Measurement Standards.* . Carlson, A.D.; Poenitz, W.P.; Hale, G.M.; Peelle, R.W.; Dodder, D.C.; Fu, C.Y.; Mannhart, W. . 05/93
- ORNL/RSIC-55, 1-8.** . *The Origin of Radiation Shielding Research: The Oak Ridge Perspective.* . Abbott, L.S. . 11/92
- ORNL/RSIC-55, 17-32.** . *Aircraft Shielding Experiments at General Dynamics Fort Worth, 1950-1962.* . Schaeffer, N.M. . 11/92
- ORNL/RSIC-55, 33-46.** . *Where Have the Neutrons Gone - A History of the Tower Shielding Facility.* . Muckenthaler, F.J. . 11/92
- ORNL/RSIC-55, 47-54.** . *History and Evolution of Buildup Factors.* . Trubey, D.K. . 11/92
- ORNL/RSIC-55, 55-58.** . *Early Shielding Research at Bettis Atomic Power Laboratory.* . Shure, K.; Wallace, O.J. . 11/92
- ORNL/RSIC-55, 59-74.** . *UK Reactor Shielding: Then and Now.* . Butler, J. . 11/92
- ORNL/RSIC-55, 75-86.** . *A Very Personal View of the Development of Radiation Shielding Theory.* . Goldstein, H. . 11/92
- ORNL/RSIC-55, 9-16.** . *Shielding Research at the Hanford Site.* . Bunch, W.L. . 11/92
- P16-93-37.** . *Measurement of the Characteristics of JINR Neutron Reference Fields.* . Aleinikov, V.E.; et al. . 1993