RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX X • OAK RIDGE, TENNESSEE 37830

No. 170 *February 1979*

The man who makes no mistakes does not usually make anything. . . . Edward J. Phelps

RSIC STAFF MEMBERS TRAVEL

R. W. Roussin participated in the First Topical Meeting on Fusion Reactor Materials held January 29–31 in Miami Beach and presented RSIC coverage of the subject area in a poster session.

D. K. Trubey is in India (1/29–2/25) participating in the U.S. India Exchange of Scientists Program administered by the U.S. National Science Foundation (NSF) and the India Council of Scientific Industrial Research (CSIR). Information will be exchanged in radiation transport and shielding at several research institutions, and he will collaborate with D. V. Gopinath of the Reactor Research Center at Kalpakkam in continuation of work begun while Dr. Gopinath was on guest assignment to RSIC in 1977. Trubey made RSIC orientation visits with Japanese shielding scientists and engineers enroute to India and will make short visits with staff members of the Turkish AEC in Istanbul, the IAEA Data Center in Vienna, and shielding scientists in Czechoslovakia. He will return to RSIC on March 6th.

PROCEEDINGS OF SPECIAL SESSION, ANS WINTER MEETING AVAILABLE SOON

ORNL/RSIC-43, ANS/SD-79/16, "Radiation Streaming in Power Reactors - Proceedings of the Special Session, American Nuclear Society (ANS) Winter Meeting, Washington, D.C., November 15, 1978," edited and compiled by Gerald P. Lahti, Robert R. Lee, and John C. Courtney (January 1979) will be available within the next two months. If you wish to reserve a copy, please fill out and return the form attached to the back of this newsletter.

NCRP ANNOUNCES AVAILABILITY OF THREE NEW REPORTS

The National Council on Radiation Protection and Measurements (NCRP) announced the publication of three reports: NCRP Report No. 59, **Operational Radiation Safety Program,** NCRP Report No. 60, **Physical, Chemical and Biological Properties of Radiocerium Relevant to Radiation Protection Guidelines,** and NCRP Report No. 61, **Radiation Safety Training Criteria for Industrial Radiography.** Reports 59 ($5.25 per copy) and 61 ($5.00 per copy) are expected to go on sale December 15, 1978, and Report No. 60 ($6.00 per copy) is expected to become available February 1, 1979.

NCRP Report No. 59 sets out in a systematic way the philosophy and the basic principles and requirements for an operational radiation safety program. The report includes a range of subject material that is applicable not only to a large facility, but also, in part, to a small one. It provides a broad, uniform set of program recommendations and recommended practices that are intended to be helpful to management as well as to individuals directly concerned with radiation protection activities. Major sections of the report cover the following topics: organization of radiation safety programs, facility design, warning and personnel security systems, monitoring and control programs, personnel protective equipment, orientation and training, emergency planning, occupational medicine program for radiation workers, and governmental regulations. The report also contains an appendix setting out definitions of common radiation protection terms used therein.

NCRP Report No. 60 presents a summary of our present knowledge of the relevant physical, chemical and biological properties of radiocerium as a basis for establishing radiation protection guidelines. It reviews the chemical and physical properties of radiocerium relative to the biological behaviour of internally deposited cerium and other lanthanides. Also included is information on the sources of radiocerium in the environment and the pathways to man. It includes a description of the metabolic fate of cerium in several mammalian species, which can serve as a basis for predicting the radionuclide's metabolic fate in man. The report considers the biomedical effects of radiocerium in the light of information made available by the extensive animal experimentation on this radionuclide. The last two sections describe the history of radiation protection guidelines for radiocerium and summarize data required for evaluating the adequacy of current radiation protection guidelines.

NCRP Report No. 61 was developed as a guide for training persons in the safe use of sources of radiation for industrial radiography. The report includes general information on the need for training criteria, organization of safety programs, the selection of instructors and the selection of radiography personnel. Three phases of training are delineated in the report: initial training, on-the-job training, and periodic training. Detailed outlines of material to be covered in each of the three types of training are presented as an aid to the development of appropriate training programs. The report is expected to be valuable to managers of organizations that utilize industrial radiography, individuals responsible for the training of industrial radiographers, the industrial radiographers themselves, and individuals responsible for radiation protection in connection with industrial radiography.

Copies of the above three reports may be obtained by contacting NCRP Publications, P. O. Box 30175, Washington, D.C. 20014.

VISITORS TO RSIC

The following persons came for an orientation visit and/or to use RSIC facilities during the month of January:

Ronald Dalton, Florida State University, Gainesville; and Kun Joong Yoo, Korean Atomic Energy Research Inst., Seoul, Korea (presently at ORNL Operations Division for one year).

UPCOMING MEETINGS

February 1979

Nuclear Instrumentation and Control Symposium, February 19–20, 1979, Holiday Inn, Toronto-Don Valley, Toronto, Ontario, Canada. Contact: Canadian Nuclear Association, 65 Queen Street, West., Suite 1120, Toronto, Ontario, M5H 2M5, Canada.

March 1979

Fuel Cycle Conference '79, March 11–14, 1979, Peachtree Plaza Hotel, Atlanta, Georgia. Contact: Conference Registrar, Atomic Industrial Forum, Inc., 7101 Wisconsin Avenue, Washington, D.C. 20014.

Workshop on Reactor Construction and Operation—Managing Costs and Schedules, March 18–21, 1979, Fairmont Hotel, Dallas, Texas. Contact: Conference Registrar, Atomic Industrial Forum, Inc., 7101 Wisconsin Avenue, Washington, D.C. 20014.

April 1979

Nuclear Power Safety Course, April 2–6, 1979, Georgia Institute of Technology, Atlanta, Georgia. Contact: Director, Department of Continuing Education, Georgia Institute of Technology, Atlanta, Georgia 30332.

June 1979

19th Canadian Nuclear Association International Conference and Exhibition, June 13, 1979, Royal York Hotel, Toronto, Canada. Contact: Dr. Michael Hare, Program Chairman, CNA Conference, Atomic Energy of Canada Limited, Sheridan Park Research Community, Mississauga, Ontario, Canada, L5K 1B2.

July 1979

1979 IEEE Annual Conference on Nuclear and Space Radiation Effects, July 17–20, 1979, University of California, Santa Cruz, California. Contact: J. P. Raymond, Mission Research Corporation, P. O. Box 1209, La Jolla, California 92031.

CHANGES IN COMPUTER CODE COLLECTION (CCC)

The following changes have been made in the collection.

CCC-320/DOT IV

The two-dimensional discrete ordinates code system with space-dependent mesh and quadrature (DOT 4.2, January 1979) is a contribution of the Engineering Physics Division, Oak Ridge National Laboratory. The code system is designed to allow very large problems to be solved on a wide range of computers and memory arrangements. New flexibility in both space-mesh and directional-quadrature specification is allowed. For example, the radial mesh in an R-Z problem can vary with axial position. The directional quadrature can vary with both space and energy group. Several features improve performance on both deep penetration and criticality problems. The code package contains 40,350 records of computerized information and full documentation. Until further notice, **the code package is available to domestic requesters only.** Reference: ORNL/TM-6529. FORTRAN IV and Assembler Language; IBM 360/370.

CCC-328/3DB

A three-dimensional multigroup diffusion theory code for fast reactor criticality and burnup analysis was contributed by Battelle Northwest, Richland, Washington. Patterned after the 2DB code (CCC-134), 3DB can do criticality searches on buckling, time absorption, material concentrations, and region dimensions. Alpha and k_{eff} can be used as parametric eigenvalues. Criticality searches can be performed during burnup to compensate for fuel depletion. Reference: BNWL-1264. FORTRAN IV; CDC.

CCC-330/PADLOC

The one-dimensional time-dependent code system for calculating coolant and plateout fission product concentrations in a network of pipes was contributed by General Atomic Company, San Diego, California. Developed for the analysis of core heatup accidents, PADLOC is used in licensing efforts and probabilistic risk assessments. Reference: GA-A14404 (UC-77). FORTRAN IV; UNIVAC.

CCC-331/EGS

A code system for the Monte Carlo simulation of electromagnetic cascade showers was contributed by the Stanford Linear Accelerator Center, Stanford University, in California. Designed for studies of shower counters, liquid argon chambers, calorimeters, sodium iodide arrays, EGS is also used in high energy physics at electron-positron storage ring facilities, especially since the psi-particle discoveries. The system is written in an extended FORTRAN language known as MORTRAN which is said to add flexibility and portability. The capability for MORTRAN to FORTRAN conversion is included in the package. Reference: SLAC-210. MORTRAN/FORTRAN; IBM.

CCC-333/BUSH

A code system to calculate radiation doses inside buildings from routine releases of radionuclides to the atmosphere was contributed by Oak Ridge National Laboratory. Both internal dose from inhaled radionuclides and external photon dose from airborne and surface-deposited radionuclides are considered. Reference: ORNL/TM-6525. FORTRAN IV; IBM 360.

CCC-334/FORSS

A code system for sensitivity and uncertainty analysis was contributed by Oak Ridge National Laboratory. An analytical tool used to study the relationships between nuclear reaction cross sections.

integral experiments, and reactor performance predictions and their respective uncertainties, FORSS development is based upon transport theory (with a diffusion theory option) so that the same tool is applicable to both shielding and reactor core problems in multidimensional geometry. Reference: ORNL/TM-5563. FORTRAN IV; IBM 360.

CHANGES IN THE SCALE SYSTEM COLLECTION

Several stand-alone computer codes expected to form a base of the NRC-sponsored SCALE (Standardized Computing Analysis for Licensing Evaluation) system have been collected, tested, packaged, and made available. These code packages will be maintained until replaced by modules in SCALE as they are developed. An initial version of the SCALE system (a criticality package), consisting of a system driver, functional modules, a numeric nuclear data base, a materials information processor, and system control modules, is currently being documented. An announcement will be made when it is available. Current changes in the preliminary collection are as follows.

SCALE-1/HEATING 5

The UCND-ORNL Computer Sciences Division contributor has made available several changes to both the CALCOMP and DISSPLA versions of the plotting routine, HEATPLOT, and furnished a new test problem for the CALCOMP version. Current users may request a detailed statement of the changes and the problem. The changes are designed made to correct errors and add improvements. HEATING 5 is a generalized heat conduction code system.

SCALE-3/TRUMP 3

The code package was extended to include a CDC version (B) of the calculational system for transient and steady-state temperature distributions in multidimensional systems. TRUMP 3 was developed at Lawrence Livermore Laboratory (LLL) and was converted to double-precision, restructured to eliminate non-standard LLL computer operating system features and implemented on the IBM 360/370 (Version A) and CDC computers by the UCND-ORNL Computer Sciences Division. FORTRAN IV.

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

ANL/FPP-77-5
MACK-IV, A New Version of MACK: A Program to Calculate Nuclear Response Functions from Data in ENDF/B Format.
Abdou, M.A.; Gohar, Y.; Wright, R.Q.
July 1978
NTIS $6.00

ANL/FPP/TM-104; ORNL/RSIC-41, pp.131-145
MACK/MACKLIB System for Nuclear Response Functions.
Abdou, M.A.; Gohar, Y.M.
March 15, 1978
Dep., NTIS

ANL/FPP/TM-106
MACKLIB-IV - A Library of Nuclear Response Functions Generated with the MACK-IV Computer Program from ENDF/B-IV.
Gohar, Y.; Abdou, M.A.
March 1978
NTIS $9.25

BNL-50732
Derivation of the Probability Density Function for a Stochastic Nonlinear Advection Equation.
Meyers, R.E.; O'Brien, E.E.; Scott, L.R.
September 1977
NTIS $4.00

CONF-760770-1
Estimate of 50-Year Dose Commitment to Various Organs and Tissues of the Body from Inhalation of ^{222}Rn Free of Its Daughters.
Bernard, S.R.; Ford, M.R.; Snyder, W.S.
1976
Dep., NTIS

CONF-771125-P1
Proceedings of the Second Fusion-Fission Energy Systems Review Meeting. Volume I.
Bogart, S.L. (Ed.)
July 1978
Dep., NTIS

CONF-771155-P2
Proceedings of the Second Fusion Fission Energy Systems Review Meeting. Volume II.
Bogart, S.L. (Ed.)
July 1978
Dep., NTIS

CONF-780508-48
Computations of Nuclear Response Functions with MACK-IV.
Abdou, M.A.; Gohar, Y.
1978
Dep., NTIS

CONF-780508-59
Damage Analysis and Fundamental Studies Program.
Doran, D.G.; Reuther, T.C.; Robinson, M.T.
1978
Dep., NTIS

CONF-780534, pp.549-
The Calculated Mean Energy Deposition Pattern in an Ion Chamber for Neutrons.
Makarewicz, M.; Pszona, S.
1978
In: Sixth Symposium on Microdosimetry, Brussels, Belgium, May 22-26, 1978. Edited by J. Booz and H.G. Ebert.

COO-4540-1(Vol.1)
Technical Assessment of Vanadium-Base Alloys for Fusion Reactor Applications. Vol.1. Assessment of Data Base, Needs and Recommendations. Final Report.
Gold, R.E.; Harrod, D.L.; Ammon, R.L.; Buckman, R.W.,Jr.; Svedberg, R.C.
April 1978
NTIS $5.25

ECN-77-104
Nuclear Data Guide for Reactor Neutron Metrology. (Edition 1977)
Zijp, W.L.
August 1977
Stichting Energieonderzoek Centrum Nederland (ECN), Voortzetting van de Stichting Reactor Centrum, Nederland (RCN), Westerduinweg 3, Petten (NH)

GJBX-76(78)
DOE-Grand Junction Logging Model Data Synopsis.
Mathews, M.A.; Koizumi, C.J.; Evans, H.B.
May 1978
Dep., NTIS

GJBX-82(78)
Borehole Gamma-Ray Spectrometer for Uranium Exploration.
George, D.C.; Evans, H.B.; Allen, J.W.; Key, B.N.; Ward, D.L.; Mathews, M.A.
May 1978
Dep., NTIS

HEDL-SA-1475; CONF-780722-5
Analysis and Extension of the SAND-II Code in Damage Function Unfolding Applications.
Guthrie, G.L.; Simons, R.L.
1978
Dep., NTIS

IA-1338, pp.37-39
Natural-Uranium Light-Water Hybrid Breeding Reactors.
Greenspan, E.; Schneider, A.; Gilai, D.; Levin, P.
June 1977
In: Research Laboratories Annual Report 1976.

IAEA-213, Vol.II
Fission Product Nuclear Data (FPND) - 1977.
IAEA
August 1978
IAEA (MF Only)

IAEA-213, Vol.II, pp.421-485
Prediction of Unmeasured Fission Yields by Nuclear Theory or Systematics.
Denschlag, J.O.
August 1978
IAEA (MF Only)

IAEA-213, Vol.II, pp.487-565
Status of Decay Data of Fission Products.
Blachot, J.
August 1978
IAEA (MF Only)

IAEA-213, Vol.II, pp.567-626
Status of Delayed Neutron Data.
Rudstam, G.
August 1978
IAEA (MF Only)

IAEA-213, Vol.II, pp.627-675
Integral Determination of RP Neutron Cross Sections.
Bustraan, M.
August 1978
IAEA (MF Only)

IAEA-213, Vol.II, pp.677-741
Integral Determination of Fission Product Inventory and Decay Power.
Schenter, R.E.; England, T.R.
August 1978
IAEA (MF Only)

ICRU-29
Dose Specification for Reporting External Beam Therapy with Photons and Electrons.
ICRU
April 1, 1978
ICRU Publications, P.O. Box 30165, Washington, D.C. 20014

INDC(CCP)-125/LV
Comparison of Calculations of Standard Fast Reactors (Using the Baker Model).
Voropaev, A.I.; Van'kov, A.A.; Tsybulya, A.M.
October 1978
IAEA Nuclear Data Section, Karntner Ring 11, A-1010 Vienna

IRNE-125-1978
Zirconium and Niobium Extraction from HCl Media with DI-N-Butyl Phosphorodithioic Acid.
Iliescu, V.C.
April 1978
Comitetul de Stat pentru Energia Nucleara, Institutul de Reactori Nucleari Energetici, Pitesti - Romania

IRNE-129-1978
Investigation of Artificial Roughness Influence on Heat Transfer in Transients.
Luca, L.; Macovei, T.; Iacob, V.; Pirvu, N.
August 1978
Comitetul de Stat pentru Energia Nucleara, Institutul de Reactori Nucleari Energetici, Pitesti - Romania

KFK-2669
Applied Neutron Resonance Theory.
Forhner, F.H.
July 1978
Kernforschungszentrum Karlsruhe

LA-7310
Tritium Production in a Sphere of 6-LiD Irradiated by 14-MeV Neutrons.
Hemmendinger, A.; Ragan, C.E.; Shunk, E.R.; Ellis, A.N.; Anaya, J.M.; Wallace, J.M.
October 1978
NTIS

LA-7424-T; Thesis
A Comparison of Initial Damage Rates Using Neutron and Electron Irradiations.
Goldstone, J.A.
State University of N.Y. at Stony Brook, Stony Brook, N.Y. 11790
August 1978
NTIS

LA-7451-MS
Gamma Spectra from ^{233}U, ^{235}U, and ^{239}Pu During Thermal Neutron Irradiation.
Bendt, P.J.; Jurney, E.T.
August 1978
Dep., NTIS

LA-UR-78-1823; CONF-780546-4
Data Processing for Power Reactor Fuel Cycle Codes.
MacFarlane, R.E.
1978
Dep., NTIS

LBL-6721
Neutron Flux Density and Secondary-Particle Energy Spectra at the 184-Inch Synchrocyclotron Medical Facility.
Smith, A.R.; Schimmerling, W.; Henson, A.M.; Kanstein, L.L.; McCaslin, J.B.; Stephens, L.D.; Thomas, R.H.; Ozawa, J.; Yeater, F.W.
July 1978
Dep., NTIS

NASA Contractor Report 3043
Evaluation of Performance of Select Fusion Experiments and Projected Reactors.
Miley, G.H.
October 1978
NTIS

NRPB-R77
Radiation Exposure of the UK Population.
Taylor, F.E.; Webb, G.A.M.
November 1978
HMSO

ORNL/CSD-35
Neutronic Analysis of LMFBRs During Severe Core Disruptive Accidents.
Tomlinson, E.T.
January 1979
NTIS $5.25

ORNL/EPA-2
Potential Radiological Impacts of Recovery of Uranium from Wet-Process Phosphoric Acid.
Davis, W., Jr.; Haywood, F.F.; Danek, J.L.; Moore, R.E.; Wagner, E.B.; Rupp, E.M.
January 1979
NTIS $8.00

ORNL/RSIC-41
A Review of Multigroup Nuclear Cross-Section Processing Proceedings of a Seminar-Workshop, Oak Ridge, Tennessee, March 14-16, 1978.
Trubey, D.K.; Hendrickson, H.R. (Comps.)
October 1978
NTIS $10.75

ORNL/RSIC-41, pp.1-8
Characteristics of ENDF/B-V.
Pearlstein, S.; Kinsey, R.; Dunford, C.
October 1978
NTIS

ORNL/RSIC-41, pp.9-22; TID-28576
AMPX: A Modular System for Multigroup Cross-Section Generation and Manipulation.
Greene, N.M.; Ford, W.E., III; Petrie, L.M.; Diggs, B.R.; Webster, C.C.; Lucius, J.L.; White, J.E.; Wright, R.Q.; Westfall, R.M.
1977
NTIS

ORNL/RSIC-41, pp.23-37
NJOY: A Comprehensive ENDF/B Processing System.
MacFarlane, R.E.; Barrett, R.J.; Muir, D.W.; Boicourt, R.M.
October 1978
NTIS

ORNL/RSIC-41, pp.39-54
ETOE-2/MC^2-2/SDX Multigroup Neutron Cross-Section Processing.
Toppel, B.J.; Henryson, H.,II; Stenberg, C.G.
October 1978
NTIS

ORNL/RSIC-41, pp.55-57
Production of Multigroup Data at Livermore.
Giles, P.C.
October 1978
NTIS

ORNL/RSIC-41, pp.59-82
New Resonance Cross Section Calculational Algorithms.
Mathews, D.
October 1978
NTIS

ORNL/RSIC-41, pp.83-96
The Shielding Factor Method for Producing Effective Cross Sections: MINX/SPHINX and the CCCC Interface System.
MacFarlane, R.E.; Weisbin, C.R.; Paik, N.C.
October 1978
NTIS

ORNL/RSIC-41, pp.97-105
Implementation of the Rapid Cross Section Adjustment Approach at General Electric.
Cowan, C.L.; Kujawski, E.; Protsik, R.
October 1978
NTIS

ORNL/RSIC-41, pp.107-119
Experience in Developing and Using the VITAMIN-C 171-Neutron 36-Gamma-Ray Multigroup Coupled Cross-Section Library.
Roussin, R.W.; Weisbin, C.R.; White, J.E.; Wright, R.Q.; Greene, N.M.; Ford, W.E., III; Wright, J.B.; Diggs, B.R.
October 1978
NTIS

ORNL/RSIC-41, pp.121-130
Design Criteria for the 218-Group Criticality Safety Reference Library.
Westfall, R.M.; Ford, W.E., III; Webster, C.C.
October 1978
NTIS

ORNL/RSIC-41, pp.147-153
Resolved Resonance Processing in the AMPX Modular Code System.
Westfall, R.M.
October 1978
NTIS

ORNL/RSIC-41, pp.155-179
Cross Section Probability Tables in Multigroup Transport Calculations.
Cullen, D.E.; Plechaty, E.F.; Doyas, R.J.; Weisbin, C.R.; White, J.E.
October 1978
NTIS

ORNL/RSIC-41, pp.181-190
Comparison of VITAMIN-C Master Library Reaction Cross Sections for Iron with Multigroup Cross Sections Generated by the VIM Monte Carlo Code.
Hertel, N.; Wehring, B.; Johnson, R.H.
October 1978
NTIS

ORNL/RSIC-41, pp.191-204
Experience with the DLC-37/EPR Cross Section Library for Preliminary Gamma-Ray Heating Analysis of the Purdue University Fast Breeder Blanket Facility.
Johnson, R.H.; Paczolt, J.H.
October 1978
NTIS

ORNL/RSIC-41, pp.205-214
An Analytic Angular Integration Technique for Generating Multigroup Transfer Matrices.
Bucholz, J.A.
October 1978
NTIS

ORNL/RSIC-41, pp.215-225
Code Implementation of Partial-Range Angular Scattering Cross Sections: GAMMAR and MORSE.
Ward, J.T., Jr.
October 1978
NTIS

ORNL/RSIC-41, pp.227-253
Analytical Inequalities Satisfied by the Cross-Section Self-Shielding Factors: Best Upper and Lower Bounds.
Cacuci, D.G.; Bjerke, M.A.
October 1978
NTIS

ORNL/TM-6353
Distribution of Fission Products in Peach Bottom HTGR Fuel Element E01-01.
Wichner, R.P.; Dyer, F.F.; Martin, W.J.; Fairchild, L.L.
October 1978
NTIS

ORNL/TM-6442
Generic Assessment of Radiation Exposures to Workers in a Portable Smelter and to the Surrounding Population.
Randolph, M.L.; Watson, A.P.; O'Donnell, F.R.
October 1978
NTIS

ORNL/TM-6503
CARP, A Computer Code and Albedo Data Library for Use by BREESE, the MORSE Albedo Package.
Emmett, M.B.; Rhoades, W.A.
October 1978
NTIS

ORNL/TM-6528/R1
Cross Sections for the $^{14}N(n, p)$, (n, alpha), and (n, $alpha_1$) Reactions from 0.5 to 15 MeV.
Morgan, G.L.
November 1978
NTIS $5.25

PNL-2823
Safety Aspects of Activation Products in a Compact Tokamak Fusion Power Plant.
Willenberg, H.J.; Bickford, W.E.
October 1978
NTIS

PPPL-1475
Tokamak Fusion Test Reactor - Final Design Report.
Princeton Plasma Physics Laboratory
August 1978
Princeton University, Plasma Physics Laboratory, Princeton, N.J.

RD/B/4179
Decay Heat Testing of the UK-ENDF/B-IV Format Fission Product Decay Data File.
Tobias, A.
December 1977
Dep., NTIS (U.S. Sales Only)

UCRL-52000-78-10, pp.25-33
Multiband Calculations of Neutron and Photon Transport.
Cullen, D.E.
October 1978
NTIS $4.00
In: Energy and Technology Review

UCRL-80782
Conceptual Design Considerations and Neutronics of Lithium Fall Laser Fusion Target Chambers.
Meier, W.R.; Thomason, W.B.
May 1978
Lawrence Livermore Laboratory

UCRL-81092
Neutron Spectra from Materials Used in Fusion and Fusion-Fission Hybrid Reactors.
Hansen, L.F.; Wong, C.; Komoto, T.; Pohl, B.A.
September 1978
Lawrence Livermore Laboratory

UCRL-81206
Materials Considerations for Inertially-Confined Fusion Reactors (ICFR).
Hovingh, J.
June 1978
Lawrence Livermore Laboratory

UCRL-81820
Neutron and Gamma Spectra from ^{232}Th, ^{235}U, ^{238}U, and ^{239}Pu After Bombardment with 14-MeV Neutrons.
Hansen, L.F.; Wong, C.; Komoto, T.T.; Pohl, B.A.; Goldberg, E.; Howerton, R.J.; Webster, W.M.
October 31, 1978
Lawrence Livermore Laboratory
To be submitted to Nuclear Science Engineering

UWFDM-266
Three-Dimensional Neutronics Analysis of the Solase-H Laser Fusion Fissile-Enrichment-Fuel-Factory.
Ragheb, M.M.H.; Youssef, M.Z.; Abdel-Khalik, S.I.; Maynard, C.W.
November 1978
Fusion Research Program, Nuclear Engineering Dept., University of Wisconsin, Madison, Wisconsin 53706

UWFDM-267
Parametric Studies of Tandem Mirror Reactors.
Shiang, K.; Conn, R.W.; Kesner, J.
October 1978
Fusion Research Program, Nuclear Engineering Dept., University of Wisconsin, Madison, Wisconsin 53706

UWFDM-268
Simulation of Transport in the Central Cell of a Tandem Mirror.
Lao, L.L.; Conn, R.W.
October 1978
Fusion Research Program, Nuclear Engineering Dept., University of Wisconsin, Madison, Wisconsin 53706

UWFDM-271
Phase Stability Under Irradiation - A Review of Theory and Experiment.
Wilkes, P.
November 1978
Fusion Research Program, Nuclear Engineering Dept., University of Wisconsin, Madison, Wisconsin 53706

UWFDM-272
Laser Fusion Hybrids - Technical, Economic and Proliferation Considerations.
Moses, G.A.; Conn, R.W.; Abdel-Khalik, S.I.
November 1978
Fusion Research Program, Nuclear Engineering Dept., University of Wisconsin, Madison, Wisconsin 53706

Health Phys., 35(5), 718-719
Simplified Shielding for Diagnostic X-Ray Rooms. (Notes)
Rummerfield, P.S.
November 1978

Nucl. Sci. Eng., 69(1), 6-13
Angular Effects in Toroidal Diffusion.
Pomraning, G.C.
January 1979

Nucl. Sci. Eng., 69(1), 55-64
Fick's Law and the Neutron Slowing Down Length in Hydrogenous Moderators.
Gago, C.B.
January 1979

Nucl. Sci. Eng. 69(1), 76-77
Monte Carlo Source Biasing Optimization.
Hoffman, T.J.
January 1979

Nucl. Sci. Eng., 69(1), 78-85
An Empirical Formula Predicting Shutdown Dose Rate of the Recirculation Pipes in Boiling Water Reactors. (Tech. Note)
Uchida, S.; Kitamura, M.; Kukuchi, M.; Yusa, H.; Ohsumi, K.; Matsushima, Y.
January 1979

Nucl. Sci. Eng., 69(1), 99-104
Helium Production in Stainless Steel. (Tech. Note)
Goel, B.
January 1979

Nucl. Sci. Eng., 69(1), 104-107
The Importance of Subthreshold Fission Phenomena in Certain Applications of Fission Threshold Detectors: An Example of Neptunium-237 for Nondestructive Assay. (Tech. Note)
Difilippo, F.C.; Ragan, G.L.
January 1979

Nucl. Sci. Eng., 69(1), 114-125
Eigenvalue Spectrum of Multiplying Slabs and Spheres for Monoenergetic Neutrons with Anisotropic Scattering. (Tech. Note)
Dahl, E.B.; Sjostrand, N.G.
January 1979

Nucl. Technology, 42(1), 22-33
A Parametric Study of a Lithium-Cooled Tokamak Blanket.
Chao, J.; Mikic, B.B.; Todreas, N.E.
January 1979

Nucl. Technology, 42(1), 34-50
Preliminary Design and Neutronic Analysis of a Laser Fusion Driven Actinide Waste Burning Hybrid Reactor.
Berwald, D.H.; Duderstadt, J.J.
January 1979

BOOK
AN INTRODUCTION TO FISSION REACTOR THEORY.
Onega, R.J.
1975
University Publications, P.O. Box 47, Blacksburg, Virginia 24060

COMPUTER CODES LITERATURE

ANL-76-11 Rev.1 ..... PTOLEMY
PTOLEMY: A Program for Heavy-Ion Direct-Reaction Calculations.
MacFarlane, M.H.; Pieper, S.C.
Argonne National Laboratory, Argonne, Illinois
April 1978
IBM 360

CNEN-RT/FI(77)6 ..... CERBERO 2
CERBERO 2: Improved Version of the CERBERO Computer Code.
Fabbri, F.; Fratamico, G.; Reffo, G.
CNEN, Italy
1977

ECN-25 ..... DOSCROS77
Cross Section Library DOSCROS77 (in the SAND-II Format.)
Zijp, W.L.; Nolthenius, H.J.; Van Der Borg, N.J.C.M.
Netherlands Energy Research Foundation, Petten, the Netherlands
August 1977

ECN-36 ..... DAMSIG77
Damage Cross Section Library (DAMSIG77).
Zijp, W.L.; Appelman, K.H.; Nolthenius, H.J.; Rieff, H. Ch.
Netherlands Energy Research Foundation, Petten, the Netherlands
February 1978

ECN-37 ..... NEUTRON METROLOGY
Nuclear Data Guide for Reactor Neutron Metrology (Edition 1977).
Zijp, W.L.
Netherlands Energy Research Foundation, Petten, the Netherlands
February 1978

GA-A-14401 ..... PADLOC
PADLOC, A One-Dimensional Computer Program for Calculating Coolant and Plateout Fission Product Concentrations.
Hudritsch, W.W.; Smith, P.D.
General Atomic Company, San Diego, California
November 1977

JAERI-M-7078 (In Japanese)
..... QMESH; QPLOT; RENUM
Automatic Mesh Generation with QMESH Program; With QPLOT and RENUM.
Ise, T.; Tsutsui, T.
Japan Atomic Energy Research Institute, Tokyo, Japan
May 1977
AVAIL: NTIS (U.S. Sales Only)

KBS-TR-01 (In Swedish) ..... ORIGEN
Radionuclide Inventories in PWR Spent Fuel and High-Level Waste Calculated by Use of the ORIGEN Code.
Kjellbert, N.
Kaernbraenslesaekerhet, Stockholm, Sweden
April 1977
AVAIL: NTIS (U.S. Sales Only)

LA-7191-MS ..... MINX/1DX; ETOE-2/MC^2-2
Differences Between LASL- and ANL-Processed Cross Sections; MINX/1DX vs. ETOE-2/MC^2-2.
Kidman, R.B.; MacFarlane, R.E.; Becker, M.
Los Alamos Scientific Laboratory, Los Alamos, New Mexico
March 1978
AVAIL: NTIS

LA-7355-MS ..... ENDF/B-IV; LIB-IV
ENDF/B-IV, LIB-IV, and CSEWG Benchmarks.
Kidman, R.B.
Los Alamos Scientific Laboratory, Los Alamos, New Mexico
June 1978

LA-7475-MS ..... MCN
The Application of Artificial Intelligence Techniques to the Acceleration of Monte Carlo Transport Calculations.
Macdonald, J.L.; Cashwell, E.D.
Los Alamos Scientific Laboratory, Los Alamos, New Mexico
September 1978

LA-UR-78-771; CONF-780334-4 ..... NJOY
NJOY: A Comprehensive ENDF/B Processing System.
MacFarlane, R.E.; Barrett, R.J.; Muir, D.W.; Boicourt, R.M.
Los Alamos Scientific Laboratory, Los Alamos, New Mexico
1978
AVAIL: NTIS

LA-UR-78-772; CONF-780334-3
..... MINX/SPHINX
Shielding Factor Method for Producing Effective Cross Sections. MINX/SPHINX and the CCCC Interface System.
MacFarlane, R.E.; Weisbin, C.R.; Paik, N.C.
Los Alamos Scientific Laboratory, Los Alamos, New Mexico
March 1978
AVAIL: NTIS

NUREG/CR-0004 ..... SNAKE
SNAKE: A Solid Angle Calculational System.
Thompson, J.K.; Lewallen, M.A.; Trapp, T.J.
Battelle Pacific Northwest Labs., Richland, Washington
February 1978

NUREG/CR-0295; ORNL/NUREG/CSD-8
..... PINT; AMPX; MINX; XLACS; ROLAIDS
A Method of Generating Multigroup Transfer Matrices Using an Analytic Angular Integration Free of Truncation Error.
Bucholz, J.A.
Oak Ridge National Laboratory, Oak Ridge, Tennessee
September 1978
FORTRAN

ORNL/TM-6078 ..... COVERT; CAVALIER
COVERT and CAVALIER: Two Computer Codes for Estimating Uncertainties of Calculated Neutronics Parameters Using Standard Interface Files SENPRO and COVERX.
Drischler, J.D.; Marable, J.H.; Weisbin, C.R.
Oak Ridge National Laboratory, Oak Ridge, Tennessee
August 1978

RD/B/N4079; IMAC/P(77)20 ..... RICE
A User's Guide to the Reactor Inventory Code RICE.
Nair, S.; Henning, M.J.
CEGB, Berkeley Nuclear Labs., UK
January 1978
FORTRAN IV (Level H) IBM 370/165

Talanta, 25(1), 21-40 ..... IDENT; SAMPO
IDENT - A Radioisotope-Identification Subroutine for Use with the Gamma-Ray Spectrum Analysis Program SAMPO.
Carder, W.; MacMahon, T.D.; Eagan, A.
London University, Sunninghill Reactor Centre, UK
January 1978

UCRL-80699; CONF-780334-2 ..... CLYDE
Production of Multi-Group Data at Livermore; Description of CLYDE Code, for CDC-7600.
Giles, P.C.
Lawrence Livermore Laboratory, Livermore, California
March 1978
CDC 7600
AVAIL: NTIS