RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

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Restlessness and discontent are the first necessities of progress. . . . Thomas A. Edison

AUGUST SEMINAR-WORKSHOP PLANS EVOLVING

Entitled "Theory and Application of Sensitivity and Uncertainty Analysis," the second of this year's planned RSIC seminar workshops will be held in Oak Ridge August 22–24, 1978. C. R. Weisbin, Reactor Methods and Data Development, ORNL Neutron Physics Division, is collaborating with the RSIC Data Coordinator in organizing the conference. We, in RSIC, believe that, with the cooperation and collaboration of the international experts in the field, it is possible to survey this important technical area and essentially make an assessment of the state of the art. The proceedings of the seminar will be published as an RSIC report.

An application form for participation in the seminar-workshop is attached to this issue of the newsletter. We urge those interested in the subject area and in attending the sessions to return the form immediately (to be received prior to the end of April, if possible). Actual registration can be confirmed at a later date. In particular, we need suggested titles from those persons who wish to contribute a paper to the seminar. An immediate return of the form will be appreciated.

A 200-word abstract of papers to be given in the seminar is required by June 1, 1978. Camera-ready manuscripts for publishing in the proceedings are required at the start of the meeting (August 22). Instructions for preparation of the papers will be mailed to the lead author in each case. Each talk will be allotted 15 minutes of presentation and 15 minutes of discussion. Questions are encouraged during the talks and a roundtable informal discussion atmosphere is what is desired. In attempting to assess the state of the art, some mechanism, such as a summary paper, panel discussion and report, or other techniques will be used to draw conclusions as a result of the presentations given at the meeting.

The workshop will begin on Wednesday, August 23, and will continue through Thursday, August 24. At least one system for performing sensitivity studies will be described and demonstrated. Plans have been made to cover the ORNL FORSS system and possibly others. A more definite schedule for the workshop will be published in subsequent newsletters. Because of limited staff and facilities, it is probable that the total number of attendees will be limited. Therefore, your prompt response is urged.

SEMINAR-WORKSHOP ON MULTIGROUP CROSS SECTIONS ATTRACTS A LARGE ATTENDANCE

The Seminar-Workshop on Multigroup Cross Sections, held March 14–16, 1978, in Oak Ridge was well attended and provided an excellent forum for exchange of information on the latest techniques in multigroup cross-section processing. Ninety-seven persons registered for the meetings, twelve of whom were from foreign countries (5 from Canada, 2 from Israel, 1 from Germany, 2 from France, and 2 from Sweden).

The seminar consisted of eighteen papers contributed by speakers from various U.S. laboratories, companies and universities in the United States (see the March 1978 RSIC Newsletter for the list of papers). The proceedings of the seminar will be published as an RSIC report.

The opening workshop concentrated on the new class of data libraries now available from RSIC in AMPX and CCCC interface formats. These formats were described as well as the associated service routines and resonance self-shielding programs which allow the user to derive problem-dependent data from the new class of packaged data libraries (DLCs). The use of three of these libraries was demonstrated by means of a

detailed discussion of sample problems for each, utilizing modules from PSR-117/MARS (see announcement which follows), a data processing code package specifically designed to handle AMPX/CCCC formatted data. The libraries discussed were DLC-41/VITAMIN-C, DLC-42/CLEAR, and DLC-43/CSRL. All these DLCs are designed to be used with PSR-117/MARS for the execution of the sample problems.

The AMPX-II System was also a workshop subject. The major processing modules XLACS, NPTXS, LAPHNGAS, and SMUG were described, as well as the NITAWL and XSDRNPM modules for resonance self-shielding and transport calculations. A sample problem to demonstrate the use of the complete code system was also described. In addition, the use of a modular code system was described and techniques for implementing AMPX-II on an IBM computer were outlined.

In general, the participants seemed to find the seminar-workshop to be a worthwhile endeavor, and RSIC staff members are encouraged to continue such ventures in other subject areas of interest to our user community.

A READER WRITES

RSIC's viability depends on useful feedback from users of its products and services and on comments and suggestions received from participants in the RSIC enterprise. We enjoy dialog stimulated from material published in the RSIC Newsletter, and we continue to invite our readers to use its pages to communicate with others. Péter Vértes of the Hungarian Academy of Sciences' Central Research Institute for Physics in Budapest makes a progressive suggestion in the letter which follows. Are users of the RSIC-packaged computing technology willing to furnish feedback-in-depth as suggested? Have you counter suggestions for improving the products of the Center? *Betty F. Maskewitz*

"Computer programs have a property which deviates from that of any other goods; they become better by usage. Therefore, anyone who develops codes may profit if he gives his works to general distribution. Of course, this profit occurs only when the users take the time to communicate with the developer either directly or through other sources.

"I propose the following. Users of distributed programs will be solicited to fill out a questionnaire concerning each program, say, once a year. The questions might be the following:

1. Computer used for adaptation?
2. How much time needed for adaptation?
3. Errors/discrepancies found?
4. Cite any change introduced due to adaptation, errors and/or further development.
5. What kind of problems have been solved by use of the program?
6. Cite any results of comparison with experiments or with other similar codes.
7. Cite any publication concerned with the code or with the results of its work.
8. If the adaptation was not successful, what was the problem?

"A copy of the completed questionnaire should be forwarded to the developer of the code through the distributing center. I think such a questionnaire would offer users an opportunity to also express appreciation, when felt, and would stimulate the authors to place their work at the disposal of the entire scientific community." *Péter Vértes*

OECD NEA DATA BANK IN FORMATION

On January 1, 1978, the OECD Nuclear Energy Agency (NEA) Data Bank was established to assume the responsibilities of the former Computer Program Library (CPL) and the Neutron Data Compilation Center (CCDN), each of which was in operation for more than a dozen years. The new Data Bank is hosted

by the French Atomic Energy Commission at the Saclay Research Establishment near Paris. It is expected that the functions of the CPL, located at Ispra (Varese), Italy, and the CCDN at Saclay will be phased out as the NEA Data Bank becomes fully functioning.

Johnny Rosén, a citizen of Sweden initially selected to establish and head the Computer Program Library and current head of the NEA Nuclear Science Division at headquarters in Paris, will now also head the Data Bank. **Luis Garcia de Viedma** of the NEA CPL will serve in the Data Bank as the Deputy Head responsible for computer program services. It is expected that consolidation of the two centers at Saclay will be accomplished early in May 1978.

The NEA DATA BANK address is as follows: B. P. 9, Batiment 45, 91190 Gif-Sur-Yvette, France.

PERSONAL ITEMS

C. Devillers, who worked for several years in shielding, has informed RSIC that his responsibilities are now changed. He leads the Radiological Safety and Site Section studies, Department of Nuclear Safety (SETSSR/SESRS) at CEA/CEN Fontenay-aux-Roses, France. **J. C. Nimal** now heads the Shielding Group at CEA/CEN Saclay.

Robin Curtis has moved from the University of Birmingham in England to work in the Nuclear Research Institute, Atomic Energy Organization of Iran, in Tehran. **Neill P. Taylor** has assumed his responsibilities in the Department of Physics, University of Birmingham. Dr. Taylor is continuing work in fusion reactor neutronics and is also interested in neutron heating in fusion reactor blankets.

CHANGES IN THE COMPUTER CODE COLLECTION

The following changes were made in the computer code collection during the month.

CCC-48/QAD

A CDC version (CCC-48D) of the QAD-P5 portion of the general purpose radiation transport kernel integration code system was contributed by the Institute of Nuclear Energy Research, Lung-Tan, Taiwan. QAD-P5 is an expansion of QAD-IV which incorporates a technique for interpolating the results of neutron calculations by the moments method solution to the Boltzmann equation, gives additional source description routines, and an increase of the options on output. Interpolated moments-method neutron fluxes, energy depositions, and dose rates may be calculated. The QAD code system originated at Los Alamos Scientific Laboratory. This CDC conversion is packaged as an extension of the CDC version done by NUS Corp., Rockville, Maryland (August 1977 Newsletter).

CCC-220/LUIN-II

This analytical straight-ahead approximation transport code package has been replaced by a later version which contains changes and improvements: an improved representation of the stopping power, including the effect of straggling; variable quadrature for calculating fluxes and ionizations from doubly-differential spectra; variable density structures, better reflecting the effect of changes in atmosphere temperature; the curvature of the earth; and the dependence of the cut-off rigidities of zenith and azimuth. An auxiliary routine is provided to prepare cut-off rigid data for LUIN. The dependence of atmospheric cosmic-ray fluxes on solar activity has been caluclated in detail. LUIN is a contribution of the DOE Environmental Measurements Laboratory (formerly known as ERDA Health and Safety Laboratory), NYC. Reference: *EML-338. CDC 6600; FORTRAN IV.*

CCC-299/REBEL 2

The code package for the adjoint Monte Carlo calculation of radiation in dwelling rooms has been extended to include an IBM 360 version (C) converted by RSIC. REBEL 2 was contributed by the Central Research Institute of Physics, Budapest, Hungary (Version A, ICL-1905); and was converted to run on the CDC 6600 (Version B) by the DOE Environmental Measurements Laboratory, NY, NY. Reference: KFKI-76-65.

CCC-310/SFACTOR

SFACTOR, developed to estimate the average dose equivalent S (rem/μCi-day) to each of a specified list of target organs per microcurie-day residence of a radionuclide in source organs in man, was contributed by Oak Ridge National Laboratory. Source and target organs of interest are specified in the input data stream, along with nuclear decay information. SFACTOR computes components of the dose equivalent rate from each type of decay present for a particular radionuclide, including alpha, electron, and gamma radiation. Reference: ORNL/NUREG/TM-85. PL/I; IBM 360.

CCC-311/RADAK

RADAK, a contribution of the United Kingdom Atomic Energy Authority, Winfrith, through the NEA Computer Program Library, calculates flux spectra from the output of multi-channel and single-channel neutron or gamma-ray detectors. The output from several such detectors may be analyzed simultaneously to produce a single-valued flux solution, and allowance may be made for the uncertainties in the detector response functions. The errors, including correlations, of the flux solution are estimated. Reference: AEEW-M 1455. FORTRAN IV and Assembler Language; IBM 360.

CCC-313/PLUDOS

PLUDOS, designed to calculate ground level external gamma-ray dose from a radioactive plume, was contributed by UKAEA, Safety and Reliability Directorate, Culcheth, Warrington, through the NEA Computer Program Library. Height of the release, attenuation by the air and radioactive decay are taken into account. Reference: Informal Notes. FORTRAN IV; IBM 360.

PSR-18/PLOTFB

The ENDF/B data plotting code package was updated to include a block data routine which was supplied by UCND Computer Sciences Division at ORNL. The package was originally contributed by the National Nuclear Data Center (NNDC), Brookhaven National Laboratory, Upton, New York and ORNL. FORTRAN IV; IBM 360/75/91.

PSR-112A/MAME

Five AMPX-I modules were added to this CDC code package (see March 1978 RSIC Newsletter): AIM, COLGATE, AJAX, DIAL, and BONAMI. They were made operational on the CDC 6600 and contributed by Sandia Laboratories, Albuquerque, New Mexico. Input instructions are described on comment cards at the beginning of each code.

PSR-117/MARS

A collection of computer codes for manipulating multigroup cross section libraries in AMPX or CCCC formats was packaged to be disseminated with data (DLCs) in these flexible formats. The AMPX modules, those which handle data in multigroup form, were designed for the AMPX-II system (to be made generally available later this year). Included are: AIM, AJAX, BONAMI, CHOX, CHOXM, COMAND, DIAL, ICE-II, NITAWL, PAL, RADE, XSDRNPM, and a subroutine library, a contribution of the UCND Computer Sciences Division at ORNL. The CCCC formats are handled by LASIP-III, BINX, LINX, CINX, I2I, B2B, and I2D, a contribution of the Los Alamos Scientific Laboratory made operational on the IBM 360 at ORNL by CSD and RSIC personnel. SPHINX (required by CCCC) was contributed by Westinghouse Advanced Reactor Division, Pittsburgh, and made operational at ORNL by CSD personnel. The MARS code package can be used in conjunction with DLC-40/LIB-IV, DLC-41/VITAMIN-C, DLC-42/CLEAR, DLC-43/CSRL, DLC-52/EPRMASTER, and others. One reel of magnetic tape is required for transmittal. IBM-360/91. References: Informal Notes, ORNL/TM-3706, LA-6280-MS, LA-6219-MS, LA-6287-MS.

PSR-119/ERIC-2

ERIC-2, designed to calculate resonance integrals and cross sections for fissile or non-fissile nuclides for thermal or fast reactors, was contributed by UKAEA AEEW, Winfrith through the NEA Computer Program Library. In addition to providing group data for fast and thermal reactor calculations, ERIC-2 can be used for general investigations of resonance integrals and their associated Doppler effect. Reference: AEEW-R 323. FORTRAN IV; IBM 360.

CHANGES IN THE DATA COLLECTION

The following changes were made during March.

DLC-43/CSRL

The 218-neutron group, P_3, cross-section library in AMPX format was updated by revising the format of the package. Retrieval codes used to utilize the library have been removed from the package and the sample problems have been redone using newer AMPX modules. The new version, designated DLC-43B, is designed to be used in conjunction with PSR-117/MARS. Two reels of tape are required for transmittal. IBM-360/91; EBCDIC. Reference: "Sample Problems Used at the RSIC Seminar-Workshop on Multigroup Cross Sections," Informal Notes, to be published.

DLC-45/SENPRO

This compilation of 126-group sensitivity profiles for several CSEWG fast reactor benchmarks was updated to include provisions for the program to operate when the sensitivity coefficients vanish in the range of interest, and allows the program to continue execution containing user input errors and prints error messages. These changes were a contribution of the original ORNL contributors. The package has been designated DLC-45B.

DLC-52/EPRMASTER

The 100-group neutron cross-section data library in AMPX format, from which the neutron data in DLC-37/EPR were derived, is packaged to allow users greater flexibility in usage. EPRMASTER data, other than the format difference, corresponds to that in DLC-37D/EPR (RSIC Newsletter, April 1977) except that data from iron were not included. A sample problem is included which utilizes the AMPX format modules packaged in PSR-117/MARS. One reel of tape can be used for transmittal if requester can read 9-track, blocked, IBM 360 EBCDIC (120,000 records). References: ORNL/TM-5249 and Informal Notes.

VISITORS TO RISC

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

Franz Bitter, University of ULM, Germany (FRG); Jacob Celnik, Burns & Roe, Inc., Paramus, New Jersey; Alain Ducauze, CEA-Limeil, France; Thomas E. Eaton, University of Kentucky, Lexington; A. E. Eljabri, Louisiana State University, Baton Rouge; Yigal Gur, Soreq Nuclear Research Institute, Yavne, Israel; Donald Jared, Office of Technology Utilization/Commercialization, Oak Ridge National Laboratory (ORNL), Oak Ridge; Duaine Lindstrom, University of Oklahoma, Norman; A. P. Malinauskas, ORNL Chemical Technology Division; Dennis Mennerdahl, Swedish Nuclear Power Inspectorate, Stockholm; Pierre Paquier, CEA-Limeil, France; Gerhard Pfister, University of Stuttgart, Germany (FRG); Yoshiaki Sato, Toshiba Electric Company, Tokyo, Japan; Henry T. Smith, Science Applications, Inc., Huntsville, Alabama; H. F. Soard, ORNL Chemical Technology Division; Ron Swanson, University Computing Company, Dallas, Texas; Hans F. Wingender, Nukem Gmbh, Hanau, Germany (FRG); Atara Yaari, Hebrew University, Jerusalem, Israel; and David Yarbrough, Tennessee Tech. University, Cookeville.

UPCOMING MEETINGS

The *1978 National Computer Conference (NCC'78)* will be held June 5–8, in Anaheim, California. Highlights: the largest exhibit of computer products and services ever held with more than 330 organizations occupying 1,382 booths in the Anaheim Convention Center; approximately 100 sessions covering 25 technical and professional program areas involving computer applications, methodology, systems, and people and society; a personal computing festival consisting of commercial exhibits, approximately 30 sessions on personal computing topics, and a competition featuring microprocessor systems and applications; a professional development series of 12 one-day seminars on topics designed to enhance professional growth and advancement; and a wide range of special activities. Further information may be secured from AFIPS, 210 Summit Ave., Montvale, NJ 07645.

International Meeting on Nuclear Power Reactor Safety, an international meeting on the safety of nuclear power reactors having attained commercial status (LWR, CANDU-PHW, AGR, HTGR, FBR), is sponsored by the European Nuclear Society and the American Nuclear Society and organized by the ANS Belgian Section. The meeting will be held October 16–19, 1978, in Brussels, and will be followed immediately by technical tours. Sessions will be held on risk assessment and counter-measures, accident analysis and substantiation, phenomenology, and radioactivity generation and control.

A second notice (for first, see 12/77 RSIC Newsletter) has been issued on the *First Topical Meeting on Fusion Reactor Materials* to be held January 29–31, 1979, the Americana of Bal Harbour, Miami Beach, Florida. Since it is planned to use the titles supplied for proposed papers for assigning sessions, and for planning the format for the full meeting, authors are asked to send them in no later than May 1, 1978. Camera-ready abstracts in prescribed format for both contributed and invited papers are expected on August 1, 1978. All communications on abstracts, papers and on the publication plans should be directed to: F. W. Wiffen, Metals and Ceramics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37830 USA.

A preliminary agenda for the *Thermal Reactor Nuclear Data Conference* at Brookhaven National Laboratory (BNL) has been received for the seminar on "Nuclear Data Problems for Thermal Reactor Applications," sponsored by the Electric Power Research Institute, May 22–24, 1978. The seminar will consist of invited papers which will be presented in four technical sessions as follows: a review of microscopic data of importance to thermal reactor design; a review of the status of clean critical benchmarks of interest for both thorium and plutonium fuel cycles; a review of data for the fission products and actinides produced in thermal reactors with emphasis on calculations of benchmark experiments; and the interaction of methods and data in industrial experience. The subject matter to be covered by this seminar should be of great interest to a spectrum of scientists and engineers active in the acquisition, benchmarking, and application of basic thermal reactor physics data. Additional information may be secured from the National Nuclear Data Center, BNL, Upton, NY 11973.

The "Ettore Majorana" International Centre for Scientific Culture is sponsoring a 10-day course on *Calculational Techniques in Shielding and Dosimetry* at the Villa San Rocca in Erice (Italy). The course is devoted to scientists interested in using computer techniques for solving problems in radiation transport, dosimetry, shielding, and activation-spectrum analysis, and to students who intend to work in this field of applied research. Most of the dozen or so lecturers have contributed to the design of the various computer codes that will be used for demonstration purposes (e.g., EGS, HETC, MORSE, ETRAN, ANISN, SAMPO). They will place a strong emphasis on applications in this course and a large variety of problems will be presented in order to demonstrate the usefulness of these codes in solving problems outside the field of radiation protection. For further information, contact the director: Walter R. Nelson, Radiation Physics Group, Stanford Linear Accelerator Center, P. O. Box 4349, Stanford, CA 94305. Deadline for application to the course is August 1, 1978.

MARCH 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-76-90(Suppl.); CONF-760647-Suppl.
Proceedings of the NEANDC/NEACRP Specialists Meeting on Fast Neutron Fission Cross Sections of U-233, U-235, U-238, and Pu-239, June 28-30, 1976, at Argonne National Laboratory.
Poenitz, W.P.; Guenther, P.T.
1976
NTIS $5.50

BARC-892
Twenty-Seven Group Cross Section Set Derived from ENDF/B Library.
Garg, S.B.
1976
Dep., NTIS (U.S. Sales Only)

BNL-NCS-22365 IR
What You Should Know About ENDF/B Version V.
Kinsey, R.; Dunford, C.
June 1977
NTIS

CINDA 76/77-Suppl.3
An Index to the Literature on Microscopic Neutron Data.
IAEA
December 1977
IAEA, Vienna

CONF-760733, pp.27-35
Blanket Design for the Mirror Fusion/Fission Hybrid Reactor.
Lee, J.D.
1976
University of California, Lawrence Livermore Laboratory
In: Proceedings of US-USSR Symposium on Fusion-Fission Reactors.

CONF-761037-1
Transport Calculations and Sensitivity Analyses for Air-over-Ground and Air-over-Seawater Weapons Environments.
Pace, J.V.,III; Bartine, D.E.; Mynatt, F.R.
1976
NTIS

DOE/ET-0003
Survey of Particle Codes in the Magnetic Fusion Energy Program.
Division of Magnetic Fusion, DOE
December 1977
NTIS $5.25

EPA-520/5-77-002
EPA Assessment of Fallout in the United States from Atmospheric Nuclear Testing on September 26 and November 17, 1976 by the People's Republic of China.
Strong, A.B.; Smith, J.M.
August 1977
EPA, Office of Radiation Programs

EPRI-ER-582
Fusion Reactor First Wall/Blanket Systems Analysis Tokamak Concepts. Interim Report.
Fuller, G.M.
November 1977
McDonnell Douglas Astronautics Company-East, St. Louis

ERDA-tr-210, pp.205-208
Distribution of the Dose According to the LET in the Case of Irradiation of a Phantom with Fast Neutrons.
Budnikov, N.S.; Pozdneev, D.B.
1976
Dep., NTIS

ERDA-tr-210, pp.120-127
Comparative Measurements of the Absorbed Dose Rate of Mixed Gamma-Neutron Radiation in the Biological Channel of the VVR-M Reactor.
Bregardze, Yu.I.; Marchenko, A.V.; Maslyaev, P.F.
1976
Dep., NTIS

ERDA-tr-223
Present Status of Nuclear Fusion Research and Development.
Japan Atomic Energy Research Inst., Tokyo
1975
Dep., NTIS $6.75

EUR-5629
Basic Physical Data for Neutron Dosimetry.
Broerse, J.J. (Ed.)
1976
INIS

GA-A-14,401
PADLOC, a One-Dimensional Computer Program for Calculating Coolant and Plateout Fission Product Concentrations.
Hudritsch, W.W.; Smith, P.D.
November 1977
NTIS

GA-A14614, Vol.VII
TNS Scoping Studies - Status Report for FY-77, October 1, 1976 - September 30, 1977. Vol.VII. Remote Maintenance System.
Project Staff, Aerojet Manufacturing Company
October 1977
NTIS $8.00

HEDL-SA-1148(Draft); CONF-761127-5
Review of Microscopic Integral Cross Section Data in Fundamental Reactor Dosimetry Benchmark Neutron Fields.
Fabry, A.; McElroy, W.N.; Kellogg, L.S.; Lippincott, E.P.; Grundl, J.A.; Gilliam, D.M.; Hansen, G.E.
October 1976
NTIS $4.00

ICP-1050-3
Fast Reactor Fission Yields for 237-Np.
Maeck, W.J.; Emel, W.A.; Erikson, A.L.; Delmore, J.E.; Meteer, J.W.
September 1977
Dep., NTIS

IEA-TI-47
Mathematical Foundations of Transport Theory.
Burniston, E.E.
May 1975
Dep., NTIS (U.S. Sales Only)

INDC(POL)-8/L; INR 1709/I/PL/A
Evaluation of the $^{58}Ni(n,2n)^{57}Ni$ Reaction Cross Sections.
Adamski, L.; Herman, M.; Marcinkowski, A.
November 1977
IAEA Nuclear Data Section, Karntner Ring 11, A-1010 Vienna

IRT-8025-723
Time-Dependent Measurements of Fast-Neutron and Secondary Gamma-Ray Transport Through a Thick Concrete and Steel Shield. Final Report.
Young, J.C.; Harris, L.,Jr.; Bryan, D.E.; Lurie, N.A.; Steinman, D.K.; Friesenhahn, S.J.; Gober, W.E.; Schanzler, L.
April 16, 1975
Instrumentation Research Technology, 7650 Convoy Court, P.O. Box 80817, San Diego, California 92138

JUL-1279
Results of the Contribution to the EWGRD Intercomparison of Unfolding Codes for Neutron Spectra Evaluation, Performed by Means of the RFSP-JUL Programme.
Fischer, A.
March 1976
Zentralbibliothek der Kernforschungsanlage Julich GmbH, Julich, Bundesrepublik Deutschland

KFKI-1977-83
TIBSO - A Program for the Calculation of the Protection, Transfer, Life Cycle and Radiation of Radionuclides in a Compound Nuclear Reactor System.
Vertes, P.
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Central Research Institute for Physics, Budapest

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A Conditioned Random Walk with Applications.
Beyer, W.A.; Waterman, M.S.
January 1978
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LA-7036-MS
Neutronics of a Mixed-Flow Gas-Core Reactor.
Soran, P.D.; Hansen, G.E.
November 1977
NTIS $4.00

LA-7067-T
The Consistency of Differential and Integral Thermonuclear Neutronics Data. (Thesis)
Reupke, W.A.
January 1978
NTIS

LA-7095-MS
A New Probability Distribution with Applications in Monte Carlo Studies.
Johnson, M.E.; Johnson, M.M.
January 1978
NTIS $4.00

LA-NUREG-6713
Decay Heat from Products of ^{235}U Thermal Fission by Fast-Response Boil-off Calorimetry.
Yarnell, J.L.; Bendt, P.J.
September 1977
Dep., NTIS

LA-NUREG-6713
Decay Heat from Products of 235-U Thermal Fission by Fast-Response Boil-off Calorimetry.
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Dep., NTIS
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MRL-TN-387
Shielding of a 14 MeV Neutron Generator.
Brighton, D.R.
October 1976
Dep., NTIS (U.S. Sales Only)

ORNL-5054/R1
Evaluated Nuclear Structure Data File. A Manual for Preparation of Data Sets.
Ewbank, W.B.; Schmorak, M.R.
February 1978
NTIS

ORNL-5314
Analysis of ZPPR-5 Source Level Flux Monitor Experiments.
Selby, D.L.; Flanagan, G.F.
February 1978
DOE, TIC, P.O. Box 62, Oak Ridge, Tenn. 37830 $5.25

ORNL-5362
Radioactive Waste Transportation Systems Analysis and Program Plan.
Shappert, L.B.; Joy, D.S.; Heiskell, M.M.
March 1978
NTIS $5.50

ORNL/RSIC-5/V5
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Trubey, D.K.; Roussin, R.W.; Gurney, J.; Gustin, A.B.
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ORNL/TM-5063
GOFRR: A Computer Code to Generate Graphical Output of DOT and ANISN Fluxes and Reaction Rates.
Sadler, F.B.; Selby, D.L.
March 1978
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ORNL/TM-5850
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Difilippo, F.C.; Perez, R.B.
December 1977
NTIS $4.50

ORNL/TM-6161
Evaluation of the ^{232}U Neutron Cross Sections for Incident Neutron Energies up to 3 keV.
de Saussure, G.; Macklin, R.L.
December 1977
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ORNL/TM-6189
Health Physics Aspects of Nuclear Radiations from Deuterium Beam Injectors.
Kim, J.
February 1978
NTIS $4.50

ORNL/TM-6193
Radiation Effects on Insulators for Superconducting Magnets.
Kernohan, R.H.; Coltman, R.R.,Jr.; Long, C.J.
January 1978
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ORNL/TM-6267; ENDF-259
Contributions to Few-Channel Spectrum Unfolding.
Perey, F.G.
February 1978
NTIS $6.00

ORNL-tr-4193; IKE-4-5 (In German)
RSYST: Short Description of the Modules.
Ruehle, R.
April 1976
Dep., NTIS $9.00

PPPL-1380
Feasibility Study of LiF-BeF_2 and Chloride Salts as Blanket Coolants for Fusion Power Reactors.
Imamura, Y.
September 1977
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SAND-76-0534
Influence of Plume Rise on the Consequences of Radioactive Material Releases.
Russo, A.J.; Wayland, J.R.; Ritchie, L.T.
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Perspective on the Fusion-Fission Hybrid Reactor.
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UCRL-50043-1, pp.51-59
Reaction Rates in Uranium Pile Surrounding a *14-MeV Neutron Source: Calculations of the Weale* Experiment.
Haight, R.C.; Lee, J.D.; Maniscalco, J.A.
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