

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. 172

April 1979

All papers that you save will never be needed until such time as they are disposed of, when they become essential.
... John Corcoran

RSIC PRODUCTS UNDER STAFF REVIEW

At long last, an internal audit of RSIC packaged products is underway with consequent removal from the information collections materials considered to be obsolete in terms of current usage and the state of the art. The computer code collection (radiation transport and shielding) is the subject of close, critical scrutiny at the present time. RSIC staff members, always reluctant to purge our files of materials so laboriously acquired as early computing technology, hope that this month's "Quotable Quote" is truly a 'Fool's Rule' in relation to the material which is discarded.

A decision to remove computing technology written in obsolete or non-standard programming languages is easy to make. In cases where newer, more modern methodology is available, the decision is easy to make. However, there are many difficult decision areas, and we hope that "that which is disposed of" does not afterwards "become essential."

In at least two areas in which there is no apparent current US support for research and development, we "preserve the technology" as packaged: space shielding and civil defense shelter shielding. Other areas in which R&D is dormant may receive the same consideration. We will appreciate the comments and suggestions of our readers.

An archival set of documentation on material obsoleted is preserved. Any surplus documents will be offered in the **RSIC Grab Bag** for those who may wish a reference copy. For anyone (university library or individual) wishing to receive an available copy of each, please call immediately (615-574-6176; FTS 624-6176).

An archival record of the entire code collection, since RSIC's beginning, is available on request. Among the first 80 code packages (CCC-I through CCC-80) examined, the following versions have been retained for RSIC archives and for dissemination upon demand. Consult your book of abstracts (ORNL-RSIC-13) or capsule listing for descriptive titles.

CCC-17/05R	IBM 360 version (A) and Cross Section Libraries; Monte Carlo.
CCC-23/MAVRAC	Space shielding technology.
CCC-24/CARSTEP	Space shielding technology.
CCC-25/TRG-SGD	Early weapons shielding technology.
CCC-26/GRACE II	Version C, gamma-ray kernel integration.
CCC-28/FPIC	IBM 360 Version (B); fission product inventory series.
CCC-31/BREMRAD	Bremsstrahlung code.
CCC-32/CLOUD	IBM 360 (B) version; atmospheric transport series.
CCC-42/DTF-IV	CDC (D) and IBM (C) versions; 1-D discrete ordinates.
CCC-46/OGRE	Monte Carlo; gamma-ray transport.
CCC-48/QAD	Kernel integration; IBM (B) and CDC (D).
CCC-50/LRSPC	Space shielding technology.
CCC-51/LPPC	Space shielding technology.
CCC-52/LEBC	Space shielding technology.
CCC-53/LSVDC	Space shielding technology.

IF YOU CHANGE YOUR ADDRESS, please notify us (including Building and Room No. where needed). *Third Class Mail* is returned to us at our expense if the addressee has moved. If your mail is returned, your name will be deleted from our distributions until we hear from you.

CCC-54/NRN	C version (CDC); removal-diffusion.
CCC-55/ISOGEN	B version (IBM 360); fission product inventory series.
CCC-56/MYRA	Early fuel element shipping cask code.
CCC-57/STERNO	Gamma-ray heating; kernel integration.
CCC-60/SDC	C version (IBM 360); kernel integration.
CCC-62/K009	Space shielding technology.
CCC-64/LPSC	Space shielding technology.
CCC-66/BIGGI	Gamma-ray transport; B (IBM 360) and C (UNIVAC).
CCC-67/STORM	Space shielding technology.
CCC-70/CHARGE	Space shielding technology; B (IBM 360) and C (CDC).
CCC-72/COMPRASH	C (IBM 360) only; removal-diffusion.
CCC-73/ASTROS	Space shielding technology.
CCC-74/CAPS-2	Civil defense shelter shielding.
CCC-75/G ³ -6Ed.	Multigroup gamma-ray scattering, kernel integration.
CCC-76/BPPC	Space shielding technology.
CCC-77/BEBC	Space shielding technology.
CCC-78/BED	Space shielding technology.
CCC-79/ISOSHL D II & III	Isotope shielding, kernel integration.
CCC-80/GASS	Self-shielding in encapsulated gamma-ray sources.

The following code packages have been removed: CCC-1/14-0, CCC-2/14-1, CCC-3/14-2, CCC-4/15-2, CCC-5/C-17, CCC-6/L-63, CCC-7/NTC, CCC-8/K-74, CCC-9/L-05, CCC-10/C-18, CCC-11/SANE, CCC-12/SAGE, CCC-13/ADONIS, CCC-14/FMC-G, CCC-15/FMC-N, CCC-16/18-0 & 18-1, CCC-17/05R (B), CCC-18/05-0, CCC-19/09-0, CCC-20/TRIGR, CCC-21/MORTIMER, CCC-22/MAC & MAC-RAD, CCC-27/ACT II, CCC-28/FPIC (A), CCC-29/MARTY-G, CCC-30/MARTY-N, CCC-32/CLOUD (A), CCC-33/SALOMON, CCC-34/TOPIC, CCC-35/DIPSEA, CCC-36/EMPIRE-2, CCC-37/LIPRECAN, CCC-38/TAEC, CCC-39/PROP, CCC-40/NIOBE, CCC-41/RENUPAK, CCC-42/DTF-IV (A&B), CCC-43/PROTOS, CCC-44/TORN, CCC-45/TORG, CCC-47/LEP, CCC-48/QAD (A&C), CCC-49/TAPER, CCC-54/NRN (A&B), CCC-55/ISOGEN (A), CCC-58/SPARC, CCC-59/COMBINE, CCC-60/SDC (A&B&D), CCC-61/CEP, CCC-63/OPEX, CCC-65/TDSN, CCC-66/BIGGI (A), CCC-68/TYCHE, CCC-69/CURIE-DOSE-THUNDERHEAD, CCC-70/CHARGE (A), CCC-71/MIST, CCC-72/COMPRASH (A&B), and CCC-79/ISOSHL D (I).

If anyone has improved, state-of-the-art versions of any of the above codes, please let us know by writing RSIC/ORNL, Post Office Box X, Oak Ridge, TN 37830, or calling 615-574-6176, or FTS 624-6176.

RSIC ORIENTATION VISIT TO ASIAN AND EUROPEAN SHIELDING GROUPS

D. K. Trubey returned March 7 from a series of orientation visits to radiation protection and shielding groups in Japan, India, Turkey, Czechoslovakia, and to the IAEA headquarters in Vienna. The following institutions were visited in Japan: Hitachi Energy Research Laboratory and Japan Atomic Energy Research Institute at Tokai-mura and Kyoto University. At JAERI, the Research Committee on Shielding of the Japan Atomic Energy Society was convened to exchange information with Trubey. At Kyoto University, the Kansai Branch of the Society met with him.

In India he visited the Bose Institute and the Variable Energy Cyclotron in Calcutta, the Safety Research Laboratory and the Reactor Physics Section (Fast Reactor Group) of the Reactor Research Centre at Kalpakkam, Mysore University, Andhra University, and Bhabha Atomic Research Centre, Bombay. Trubey also gave an invited review paper on reactor shielding at the Third National Conference on Radiation Physics held at Waltair on the campus of Andhra University.

In Turkey, visits were made to the Cekmece Nuclear Research and Training Center in Istanbul and to the Technical University of Istanbul.

The Czechoslovak visits included the Radiation Defectoscopy Centre (Brno Technical University) and the Rez Nuclear Research Institute near Prague.

The IAEA discussions were held with the staff of the Nuclear Data Section and the Advanced Nuclear Power Technology Section.

Much information was exchanged during the visits; the bonds between RSIC and members of the contributor-user community were strengthened, and plans were made to increase information exchange in the radiation protection, radiation transport, and shielding fields. We wish to express our thanks for the hospitality shown and the willingness to share research results.

REQUESTER, WHAT IS THE SOURCE OF YOUR FUNDS?

As the R&D contract dollar gets tighter, each RSIC sponsor asks for reliable statistics on usage of RSIC products and services by its contractor community. We made one survey of the user community in which we asked the question, "What is the source of your funds?" You responded with information for that fiscal year. We need to know, on a current basis, whether or not the specific product or service will be used in support of our sponsors' programs.

When making a request, in writing or by telephone, please tell us the name of the sponsor and program on which you are working, whatever the source of your financial support. This will be coded into our computerized records for compiling user statistics as needed. All such information is held privileged by RSIC and no names of individuals or institutions are published in the statistics.

CAN YOU ACCESS DOE/RECON?

The ~ 8,500 citations of literature on radiation transport and shielding subjects selected by RSIC reviewers for its storage and retrieval of information system (SARIS) may be searched directly by those having access to DOE/RECON. This is also the case for literature describing the computer codes collection. Information is available from RSIC for accessing these two separate data bases.

The shielding data base cites literature in the field of radiation transport, analysis, and shielding published since about 1960. Shielding against neutrons and gamma rays from nuclear reactors, radioisotopes, and nuclear weapons is emphasized. In most cases, abstracts are included. The material is indexed by keywords and by RSIC subject category codes. DOE/RECON statistics indicate that in CY 1978 this data base was searched 156 times, with 194 expands, and 7,073 citations were printed.

The Computer Codes Data Base contains citations to literature which describe computer codes designed to do radiation analysis and shielding calculations, neutron cross section processing, and experimental data analysis. Most of this literature was published after 1970. All citations have been listed in the *RSIC Newsletter*. This material is indexed by author, installation, computer on which the code is operable, the code name, and subject keywords. This data base was searched 79 times in CY 1978, with 117 expands, and 471 citations were printed.

Do you have access to DOE/RECON?

The acronym RECON stands for REMote CONsole and refers to a computerized on-line interactive storage and retrieval system that is designed to give users, who are located at various DOE contractor sites across the country, direct and fast access to bibliographic records stored in large on-line files at Oak Ridge, Tennessee. The DOE/RECON system is operated by the Computer Sciences Division of Union Carbide Corporation, Nuclear Division, for DOE's Technical Information Center.

Persons wanting information about authorization to tie into the DOE/RECON system should address their requests to: DOE, Office of Technical Information, Washington, D.C. 20545.

IRPA CALL FOR PAPERS FOR JERUSALEM CONGRESS

The scientific program committee of the International Radiation Protection Association (IRPA) has made a call for papers for its 5th International Congress to be held in Jerusalem, Israel on March 9-14, 1980.

Contributions dealing with all aspects of radiation protection, from basic research to practical application, can be offered for presentation. These include the physical, biological, medical, engineering, regulatory and organizational aspects. The final program will depend on the papers accepted. Topics of special, current interest will be emphasized by state of the art or review type invited papers from acknowledged experts. In addition, the activities of leading international organizations in radiation protection will be reviewed by speakers in plenary sessions.

Contributed papers are invited. Those which emphasize the systematic approach to the definition of the risk and of the appropriate countermeasures will be specially welcomed. The following list of tentative topics and sub-topics, included in the scope of the Congress, should be used by authors to classify their contributions. **General subjects** include: a) Physical and mathematical aspects: dosimetry, occupational procedures, statistical validity; b) Medical aspects: fitness criteria for workers, biological monitoring, radioprotectors, management of overexposures and internal contaminations; and c) Biological aspects: stochastic and non-stochastic effects, radiobiology, epidemiological studies. **Application areas** to be considered are: a) Philosophy of protection and risk assessment: justification and optimization, acceptability of risk; b) Regulatory and legal aspects: standards development, basic and devised limits, handling of monitoring data; c) Protection of the worker: in routine and post-accident conditions, design criteria, protective equipment; d) Environmental aspects: dispersion and transfer factors, radioecology, environmental monitoring; e) Protection of the public: sources of exposures and their control; f) Waste management: standards/limits for the use of different methods, impacts; g) Emergency planning and accident analysis; and h) Education, training and public information. **New techniques:** Developments in radiation detection, monitoring and other instrumentation; Developments in measurement procedures; Experimental techniques; and Radiation protection in decommissioning and dismantling of nuclear installations. In addition, the topic **Protection against non-ionizing radiations** will be covered.

The deadline for the submission of abstracts is May 15, 1979. In general, the following guidelines apply in the preparation of the abstract: 1) ≤ 250 words typed in English. 2) In the upper frame, type title of the abstract, the name(s) and affiliation(s) of the author(s), with name of principal author first; omit degrees and titles; include mailing address and telex number of principal author for future contact. 3) Under the heading "Subject Group," indicate by symbol, (e.g. 2 h or 5) into which of the topic categories listed above you would classify your paper. 4) Indicate the language in which you intend to present your paper (English or French). 5) The abstract must be typed, using single spacing between lines and double spacing between paragraphs with no indentation. 6) Drawings, diagrams, etc., may be included. 7) Send the abstract with 14 legible copies and two self-addressed gummed labels to: Yitzhak G. Gonen, Scientific Secretary, 5th International Congress of IRPA, P. O. Box 16271, Tel Aviv, Israel.

Further information concerning the program may be secured from Yitzhak G. Gonen, Scientific Secretary, or complete information on the conference from A. Eisenberg, General Secretary of the 5th International Congress of IRPA, P. O. Box 16271, Tel Aviv, Israel.

NUCLEAR STANDARDS NEWS

Several Standards Actions have been recently publicized, including a Final Action on **ANSI/ANS-6.6.1-1979**, Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants (new standard).

The following draft Regulatory Guide is out for comments with a deadline of April 20, 1979: **EM 805-5**: Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants (endorses **ANS-6.4-1977**, "Guidelines on the Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants"). Public comments are being solicited on the draft guides and associated value/impact statement to involve the public in the early stages of the development of a regulatory position in these areas.

Comments on the above Regulatory Guides must be received no later than the comment deadline by: Secretary of the Commission, Attn: Docketing & Service Branch, U.S. NRC, Washington, D.C. 20555. Obtain Regulatory Guides from NRC, Attn: Director, Division of Technical Information and Document Control, Washington, D.C. 20555.

The following publications are of interest: **ANSI/ANS-4.1-1978**, Design Basis Criteria for Safety Systems in Nuclear Power Generating Stations (\$22.00); **ANSI/ANS-15.15-1978**, Criteria for the Reactor Safety Systems of Research Reactors (\$17.00); and **ANSI/ANS-19.5-1978**, Requirements for Reference Reactors Physics Measurements (\$12.00).

A newly published **Trial Use Nuclear Glossary** is now available from the American Nuclear Society. Its publication was approved by the ANS Standards Steering Committee in concurrence with Subcommittees ANS-6, ANS-19, and ANS-50. This Glossary is presented in three chapters, each in its original form: ANS-6.5, "Glossary of Terms in Shielding and Dosimetry;" ANS-19.2, "Definitions of Reactor Physics Terms and Parameters;" and ANS-50, "Power Reactor Systems Committee Glossary of Definitions and Terminology." All comments and input will be accepted during the Glossary's twelve (12) month trial use and comment period and should be directed to Mrs. Marilyn D. Weber, ANS Standards Administrator. Copies may be ordered for \$25.00 each from ANS, 555 N. Kensington Ave., La Grange Park, Ill. 60525.

FIFTY YEARS OF RADIATION PROTECTION

The NCRP celebrated fifty years of radiation protection at the 1979 Annual Meeting (March 14-15). The predecessor group, the Advisory Committee on X-Ray and Radium Protection, was founded in 1929. The important work of this Committee culminated in the establishment of the National Council on Radiation Protection and Measurements in 1964 with a charter issued by the Congress of the United States.

In opening the 1979 Annual Meeting, Dr. Warren K. Sinclair, President of the Council, directed attention to four new activities authorized by the Board of Directors of the NCRP during the last year which will be undertaken by the following Scientific Committees: SC-59—Human Radiation Exposure Experience, SC-60—Dosimetry of Neutrons from Medical Applications, SC-61—Radon Measurements, and SC-62—Priorities for Dose Reduction Efforts.

Some 35 scientific committees have been active in the work of the Council during the last year. The results of five studies were published as **NCRP Reports**, in addition to one special publication: No. 57—Instrumentation and Monitoring Methods for Radiation Protection, No. 58—A Handbook of Radioactivity Measurements Procedures, No. 59—Operational Radiation Safety Program, No. 60—Physical, Chemical and Biological Properties of Radiocesium Relevant to Radiation Protection Guidelines, No. 61—Radiation Safety Training Criteria for Industrial Radiography, and **Lecture No. 2—Why be Quantitative About Radiation Risk Estimates?** by Sir Edward Pochin (The Lauriston S. Taylor Lecture Series in Radiation Protection and Measurements.) Currently extant NCRP publications now number 41. A list of NCRP publications is available from NCRP Publications, P. O. Box 30175, Washington, D.C. 20014.

ORAU TO OFFER APPLIED HEALTH PHYSICS COURSE

The ORAU Professional Training Programs will offer a five-week course in applied health physics in Oak Ridge beginning September 10, 1979. The registration fee of \$2,250 includes the full cost of books, materials, and field trips.

The course emphasizes the fundamentals of health physics, problems and practices in providing radiation protection, the mechanism of radiation damage, and methods and procedures for evaluating radiation hazards.

Additional information on this and other courses offered by Oak Ridge Associated Universities can be obtained from Registrar, Professional Training Programs, P. O. Box 117, Oak Ridge, TN 37830, or phone (615) 576-3434, FTS 626-3434.

PERSONAL ITEMS

Robin Curtis writes that he has returned to the United Kingdom from Iran where he was associated with the Iranian Atomic Energy Agency programs. He is now involved in the Nuclear Power Section of the Mechanical Engineering Department of the Imperial College in London, England. He expects to be working in fast reactor research and development.

VISITORS TO RSIC

The following persons came for an orientation visit and/or to use RSIC facilities during the month of March: Jeffrey R. Burnell and Jack Isbell, Data General Corp., Knoxville, TN; Dennis M. Burgett, Data General Corp., Charlotte, NC; Allen S. Holman, Development Associate, Union Carbide Corp., Oak Ridge; Lincoln Jung, Engineering Technology Div., ORNL, Oak Ridge; Dean C. Kaul, Science Applications, Inc., Chicago, IL; Odelli Ozer, Electric Power Research Institute, Palo Alto, CA; Dr. Ellis Yurdanur, Physics Division, ORNL, Oak Ridge.

UPCOMING MEETINGS

April 1979

National Topical Meeting on Computational Methods in Nuclear Engineering, April 23-25, 1979, Hospitality House Motor Inn, Williamsburg, Virginia. Contact: C. Duval Holt, ANS Mathematics & Computation Division/Virginia Section, National Topical Meeting, Computational Methods in Nuclear Engineering, Williamsburg, Virginia 23185.

Rockwell International Energy Systems Group offers the following courses in April at the Nuclear Training Center: "Radiation Protection Technology," a home study course covering the three general areas of Health Physics Fundamentals, Radiation Measurements and Operational Health Physics Technology; "Weld Inspection," April 9-13, 1979; and "Applied Sodium Technology," April 16-20, 1979. Contact: E. M. Rex, Nuclear Training Center; Phone (213) 341-1000, Ext. 2811.

May 1979

Workshop on Reactor Licensing and Safety, May 13-16, 1979, Waldorf-Astoria, New York, New York. Contact: Atomic Industrial Forum, Inc., 7101 Wisconsin Avenue, Washington, D.C. 20014; Telephone (301) 654-9260.

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.

December 1979

2nd Miami International Conference on Alternative Energy Sources, December 10-12, 1979, Miami Beach, Florida. Contact: Dr. T. Nejat Veziroglu, Director, Clean Energy Research Institute, University of Miami, P. O. Box 248294, Coral Gables, Florida 33124.

CHANGES IN THE COMPUTER CODE COLLECTION

The following changes were made in March.

CCC-209/DOT III

The CDC version (B) of DOT-III was updated to add one card to Subroutine UNCLF in GRTUNCL. Between statement numbers 5 and 10, following statement "DO 60 I=1,IM" the statement "IJT=IJT+1" was added. This change was suggested by Century Research Center Corporation, Tokyo, Japan, contributor of this version of the GRTUNCL routine.

CCC-320/DOT IV

The IBM 360 version (A) of this two-dimensional discrete ordinates transport code system was updated by a replacement of DOT 4.2 module to: a) correct an error where ICMAT refers to microscopic material; and b) improve the logic of the case where NEGIFX > 0. The update was suggested by the Oak Ridge National Laboratory contributors.

CCC-338/PURSE

The plutonium radiation source code system was contributed by Power Reactor and Nuclear Fuel Development Corporation, Tokai-mura, Ibaraki-ken, Japan. PURSE considers four decay chains and some fission-product decay chains. It can be used to calculate the radioactivity of plutonium fuels which are handled in processes from reprocessing to loading into reactors, that is conversion to PuO₂ powder, assembling, transportation of assembly and handling of reactor site. Reference: PNCT 852-78-13. FORTRAN IV; CDC 6600.

CCC-340/FEMB

A two-dimensional neutron diffusion theory, xy geometry, finite element code system was contributed by Riso Research Establishment, Roskilde, Denmark. Reference: Riso-M-1929. ALGOL; B-6700.

PSR-13/SUPERTOG-4

The IBM (A) version of this generator of fine group constants and P_n scattering matrices from ENDF/B was replaced by a new version which was contributed by The Interuniversity Reactor Institute, Delft, Netherlands, through the OECD NEA Data Bank, Gif-sur-Yvette, France. In the new version, the inelastic treatment of some materials was corrected; provision was made for making fission spectra; cross-section arrays were made 5000 elements long, thus permitting the use of ENDF/B-IV format. The original SUPERTOG code was contributed by Oak Ridge National Laboratory. The CDC (B) version remains unchanged. FORTRAN IV; IBM 360.

PSR-118/NJOY

A code system (NJOY) for producing pointwise and multigroup neutron and photon cross sections from ENDF/B-IV and ENDF/B-V evaluated nuclear data was contributed by Los Alamos Scientific Laboratory, Los Alamos, New Mexico. NJOY incorporates and improves upon its predecessor, MINX (PSR-105); includes and extends the photon-production capabilities of LAPHAN0 (PSR-20), the photon-interaction capabilities of GAMLEG (PSR-86), the heating capabilities of MACK (PSR-52), the covariance capabilities of PUFF (PSR-93), and the thermal neutron capabilities of FLANGE II (NESC-368) and HEXSCAT (NESC-291). Reference: LA-7584-M (ENDF-272). FORTRAN IV; CDC.

PSR-129/SPHINX

This one-dimensional diffusion and transport nuclear cross-section processing code system was contributed by Westinghouse Advanced Reactors Division, Madison, Pennsylvania. SPHINX incorporates both one-dimensional diffusion and transport theory in order to provide a standardized calculational scheme for generating multigroup cross sections which may be self-shielded and space-energy collapsed to desired specifications. Reference: WARD-XS-3045-17. FORTRAN IV; CDC 7600.

PSR-133/PIXSE

A generator of multigroup and multipoint cross sections for thermal reactor calculations was contributed by United Kingdom Atomic Energy Authority, Winfrith, Dorchester, Dorset, England through the OECD NEA Data Bank, Gif-sur-Yvette, France. PIXSE computes, from the scattering law, generalized energy transfer cross-section matrices and source terms for thermal reactor calculations. Reference: AEEW-M318. FORTRAN IV; IBM 360.

PSR-135/SNAKE

The SNAKE solid angle calculational system is a contribution of the Battelle Pacific Northwest Laboratories, Richland, Washington and the UCND ORNL Computer Sciences Division. SNAKE calculates solid angles subtended by geometric forms composed of spherical, cylindrical, and planar surfaces, either singularly or in specified arrays from exact analytic integral forms. This basic capability is used to provide information necessary for the solid angle method for evaluation of neutron interaction in arrays. Reference: NUREG/CR-0004. FORTRAN IV; IBM 360.

SCALE-01/HEATING-5

The generalized heat conduction code package was extended to include a CDC version (B) contributed by University of California at Berkeley. UCND ORNL Computer Sciences Division developed the original version (IBM) of the code.

CHANGES IN THE DATA LIBRARY COLLECTION

The following changes were made during the month.

DLC-33/MONTAGE

The 100-group neutron activation cross-section data package for fusion reactor structure and coolant materials was updated to reflect more than 100 changes, including 32 new reactions supplied by Los Alamos Scientific Laboratory and the University of Wisconsin. The original MONTAGE data was contributed by LASL.

DLC-59/CAD

A 51-neutron, 25-gamma-ray group albedo data library generated with DOT IV was contributed by Oak Ridge National Laboratory. Users should generally request PSR-131/CARP to accompany DLC-59/CAD. CARP processes the albedo data (CAD) and produces an albedo output tape in the format required for BREESE II tape-writing routine for MORSE (CCC-203). A minimum of four full reels of magnetic tape (361-K records on each) are required to transmit CAD. Data for 4 materials (water, iron, concrete and a combination of steel and concrete) are included in the package with one tape reel required for each given material. Reference: ORNL/TM-6503.

DLC-60/MACKLIB-IV

A complete replacement of the MACKLIB-IV Retrieval Program (January 1979 *RSIC Newsletter* announcement) was packaged to eliminate errors uncovered in testing. MACKLIB-IV is a 171-neutron, 36-gamma-ray group nuclear response function data library generated from ENDF/B-IV using MACK-IV (PSR-132). The original and its replacement are a contribution of the Argonne National Laboratory. Current users should request the new retrieval program and sample problem data.

DLC-62/NFCLIST

A nuclear fuel cycle radiation data library (NFCLIST) was contributed by the Nuclear Data Project of the Oak Ridge National Laboratory. Data are provided for the atomic and nuclear radiations emitted by 240 radionuclides which may occur in routine releases of effluents from nuclear fuel cycle facilities. The nuclear data were derived from computer files which are used to prepare NUCLEAR DATA SHEETS (i.e., the Evaluated Nuclear Structure Data File, ENSDF), and the format of NFCLIST is very similar to that of ENDF/B-V. The retrieval code for printing the data (MEDPRINT) is included in the package. Reference: ORNL/NUREG/TM-102. IBM 360/91.

ERROR IN FEBRUARY ACCESSION LIST

It has been called to our attention that an error was made in the Accession List of *RSIC Newsletter* 170 (February issue). The author's name, F. H. Froehner, was misspelled causing some misdirection of requests by mail for his report, KfK-2669, *Applied Resonance Theory*. A corrected entry is shown in the Accession List of this newsletter.

If you wish to order this report, address your request to: F. H. Froehner, Institut für Neutronenphysik und Reaktortechnik, Kernforschungszentrum Karlsruhe, Federal Republic of Germany.

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/FPP/TM-115

Extrapolated Neutron Activation Cross Sections
for Dosimetry to 44 MeV.

Greenwood, L.R.

September 1978

Chemical Engineering Division, Argonne
National Lab., Chicago, Ill. 60439

CEA-R-4913 (In French)

Measurement of Fission Neutron Energy
Spectrum of ^{235}U and ^{238}U Induced by Fast
Neutrons.

Bertin, A.; Bois, R.; Frehaut, J.

June 1978

Service de Documentation, Centre d'Etudes
Nucleaires de Saclay, Boit Postale no.2, 91190 -
Gif-sur-Yvette(France)

CLM-R-182

Results of Monte-Carlo Studies on
Backscattering and Sputtering from "Pocket" and
Finned Structures.

Brown, K.P.

January 1978

UKAEA Research Group, Culham Laboratory,
Abingdon(UK)

CONF-760436-P2

Californium-252 Source Technology, Scientific
and Industrial Applications.

Berger, R.L.; Cornman, W.R. (Eds.)

1976

Dep., NTIS

CONF-771029, Vol.I

Proceedings of the Seventh Symposium on
Engineering Problems of Fusion Research. Vol.I.

Held at Hyatt Regency, Knoxville, Tennessee,
October 25-28, 1977.

Lubell, M.S.; Whitmire, C., Jr. (Eds.)

1977

IEEE Service Center, Single Publication Sales
Dept., 445 Hoes Lane, Piscataway, N.J. 08854

CONF-771029, Vol.II

Proceedings of the Seventh Symposium on
Engineering Problems of Fusion Research. Vol.II.

Held at Hyatt Regency, Knoxville, Tennessee,
October 25-28, 1977.

Lubell, M.S.; Whitmire, C., Jr. (Eds.)

1977

IEEE Service Center, Single Publication Sales
Dept., 445 Hoes Lane, Piscataway, N.J. 08854

CONF-771029, Vol.II, pp.1453-1458

A Practical Blanket Design for a Toroidal Fusion
Reactor.

Bettis, E.S.; Barnes, J.M.; Huxford, T.J.; Liu,
K.C.; Santoro, R.T.; Watts, H.L.

1977

IEEE Service Center, Single Publication Sales
Dept., 445 Hoes Lane, Piscataway, N.J. 08853

- CONF-771029, Vol. II, pp. 1624-1627
Neutronics and Thermal Hydraulics of a Tokamak Hybrid Blanket.
Perry, R.T.; McKinnon, M.A.; Teofilo, V.L.; Aase, D.T.
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