RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION • FOR THE U.S. ATOMIC ENERGY COMMISSION

POST OFFICE BOX X •
OAK RIDGE, TENNESSEE 37831

No. 117 August 1974

The degree to which we have eliminated secrecy is the measure of our civilization.

...Frank P. Zeidler

DATA LIBRARY COLLECTION CHANGES

Changes were made to the *DNA Working Cross Section Library* as follows:

The fluorine and tantalum evaluations have been modified recently, the updated versions being designated as DNA MAT 4509 MOD 1 fluorine and DNA MAT 4179 MOD 4 tantalum-181. The changes are summarized below.

Fluorine MAT 4509 ORNL

MOD 1 July 1974

A complete evaluation including neutron and gamma-ray production data replaces MOD 0, which has only gamma-ray production data. Changes were made to the gamma-ray production files as well, with data being added for the gamma-rays from the (n,α) reaction and replaced for the 197 and 110 keV (n,n')levels. For both reactions, the gamma-ray production data were based on calculations of the corresponding neutron cross sections.

Tantalum-181 MAT 4179 LLL

MOD 4 July 1974

The partial inelastic cross sections were found to be in error in the energy range from 0.3 to 20 MeV. The problem was corrected by reducing the partial inelastic cross sections for MT=52-57 and 91, as well as total inelastic and total cross sections.

Changes were made to the *DNA Processed Cross Section Library* as follows.

DLC-31/(DPL-401/NEDT1) Neutron Element Data Tape in SAM-CE format. Data for Li-7, B-10, B-11, Mg, K, W-183, W-184, U-235, Pu-239, and Pu-240 were added in July 1974. One reel of magnetic tape required to obtain these added data (15,244 records). A total of three tapes to obtain the entire library (53985 records) written 7 track, 556 bpi, or one only, written 9 track, 800 bpi.

DLC-31/(DPL-402/GPDT1) Gamma-Ray Production Data Tape in SAM-CE Format. Data for Li-7, B-10, C-12, Mg, Fe, U-235, and U-238 added in July 1974. One reel of tape required to obtain entire library (10740 records).

A new data set was packaged during the month.

DLC-32/GAMTAB Radioactive Decay Gamma-Ray Compilation ordered by ascending gamma-ray energy and by nuclide, in ascending mass number. References are also listed. Information includes gamma-ray energy and error, nuclide identification and abundance, half-life, and production mode. The package contains the source data used to generate the "Radioactive Decay Gammas" tables published in Nuclear Data Tables, Vol. 13, Nos. 2 and 3, 1974. Contributor: Savannah River Laboratory, Aiken, S. C., through the Argonne Code Center. Required for transmittal of 26,871 records of information: one reel of magnetic tape (9T,800), or two reels (7T,556) written unblocked.

MORE ENDF/B-IV DATA RELEASED

Two additional ENDF/B-IV tapes have been released by the National Neutron Cross Section Center (NNCSC) at Brookhaven National Laboratory (BNL). The recently released tapes are numbered 406 and 408. The remainder of the ENDF/B-IV tapes are expected to be released during the summer. The contents of the tapes released thus far are shown in the accompanying table. Requests for the data should be directed to NNCSC at BNL, not to RSIC.

Contents of ENDF/B-IV Tapes Released as of August 1, 1974.

TAPE	MAT	MATERIAL	TAPE	MAT	MATERIAL	TAPE	MAT	MATERIAL
401	1128	W-182		1172	Xe-128	403	1027	Sm-149
	1129	W-183		1173	Xe-129		1030	Gd
	1130	W-184		1174	Xe-130		1083	Re-185
	1131	W-186		1175	Xe-131		1084	Re-187
	1169	H-3		1176	Xe-132		1125	Rh-103
	1195	Ca		1177	Xe-133		1127	Ta-182
	1270	He-4		1178	Xe-136		1137	Tc-99
				1181	Kr-78		1138	Ag-107
402	1031	Dy-164		1182	Kr-80		1139	Ag-109
	1032	Lu-175		1183	Kr-82		1141	Cs-133
	1033	Lu-176		1184	Kr-83		1149	Cl
	1120	H-2		1185	Kr-84		1150	K
	1146	He-3		1186	Kr-86		1156	Na-23
	1170	Xe-124		1196	V		1160	B-11
	1171	Xe-126						

TAPE	MAT	MATERIAL
404	1043	U-234
	1050	Pu-238
	1056	Am-241
	1057	Am-243
	1161	Pu-242
	1162	Cm-244
	1163	U-236
	1269	H
	1271	Li-6
	1272	Li-7
	1273	B-10
	1289	Be-9
	1294	Xe-135
	1296	Th-232
405	1193	Al-27
	1194	Si
	1280	Mg
406	1190	Ni
	1191	Cr
	1192	Fe
408	1274	C-12
	1275	N-14
	1276	O-16
	1288	Pb

CORRECTION TO PSR-51/SMUG

J. L. Lucius, Computer Sciences Division, Union Carbide Nuclear Division, Oak Ridge, and T. L. Yang, Ebasco, New York City, have called attention to an error in SMUG which occurs when the program is used to generate lower order expansion multigroup cross sections (P_0 or P_1). The error does not occur when cross section sets with more terms are produced. A correction suggested by Jim Lucius, and implemented in the RSIC package, is as follows:

In Subroutine MUG, add, as the first executable statement, T = 0.0.

In Subroutine SMUG, add, after LT = LMAX+1, the statement
IF (LT.LT.3) LT=3

SMUG was developed at ORNL to generate multigroup photon cross sections, and is designed to read ENDF formatted data.

SEMINAR-WORKSHOP ON CROSS-SECTION DATA GENERATION

In response to requests over a period of time, we are beginning to make plans for a Seminar-Workshop on cross-section data processing. It is time to reassess the state of the art and the Seminar-Workshop is probably an effective way to do it. We conclude that in a proposed cross-section data processing workshop we should include both point and multigroup data, and the entire neutron energy range from thermal data through fast through super-fast (>20 MeV) cross section data. It should include photon interaction and production processing as well.

We will appreciate having your comments,suggestions, and ideas. We will need the cooperation of the cross section code developers, the data processors, and the users of processed data in the planning, and invite your participation as a contributor and as an observer.

We are considering holding the meeting in early December in Oak Ridge. We invite your recommendations as to the most convenient date.

Watch the Newsletter for developments.

CONFERENCES

The European Nuclear Society (ENS)/American Nuclear Society (ANS) have announced the First European Nuclear Conference to be held in the Paris Convention Center, Paris, France, April 21-25, 1975. Professionals interested in nuclear energy from all countries are urged to send contributed papers and to participate in this event which will be focused on the technological maturity achieved in the world and in Europe, with particular emphasis on the practical experience acquired from the implementation and exploitation of nuclear industrial facilities. The technical program of the Conference will consist of sessions formed from contributed and invited papers on topics of special current interest, such as Water Reactor, Gas Cooled Reactor and Fast Breeders.

Submission of summaries must reach the Executive Office by October 1, 1974. Information is available from Mr. Pierre Zaleski, ENC Executive Chairman, P. O. Box No. 27, 92140 Clamart, France.

A Call for Papers has been made on the following subjects: Design and Construction; Operating Experience; Fuel Performance; Fuel Management; Nuclear Safety and Protection; Quality Assurance and Reliability for Components and Fuel; Fuel Fabrication; Reprocessing, Transport and Waste; and Low- and High-Temperature Process Heat.

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A Call for Papers has gone out for the *Conference on Nuclear Cross Sections and Technology* to be held at the Shoreham Americana Hotel, Washington, D.C., March 3-7, 1975. The purpose of the conference is to summarize the present status of Nuclear Cross Sections and Technology, to discuss future cross sections needs, and to provide opportunities for the exchange of information between nuclear scientists and engineers. Although contributions on all aspects of nuclear data are invited, the emphasis will be on the use of nuclear cross sections for applied purposes.

Original papers describing significant contributions in the following or related areas are invited: Applications of Nuclear Data to Fission Reactors; Applications of Nuclear Data to Fusion Reactors; Microscopic Data and Measurement Techniques; Standards; Benchmark Experiments and Sensitivity; Nuclear Data for Materials Analysis; Nuclear Material Safeguards and Management; Nuclear Data for Environmental Protection; Biomedical Applications of Nuclear Data; and Other Applications of Nuclear Data. The abstract must be sent by December 6, 1974, to Professor W. W. Havens, Jr., Division of Nuclear Science and Engineering, Columbia University, 520 West 120 Street, New York, N. Y. 10027.

Sponsors of the Conference are: American Nuclear Society, Reactor and Shielding Divisions; American Physical Society, Nuclear Physics Division; International Union of Pure and Applied Physics; National Bureau of Standards; and United States Atomic Energy Commission.

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"Computational Methods in Nuclear Engineering" will be the title of a topical meeting planned for Charleston, S.C., April 15-17, 1975, sponsored by the *Mathematics and Computation Division*, and *Savannah River Section* of

ANS and the *Savannah River Operations Office, USAEC.* General chairman of the meeting is H. C. Honeck (SRL) and the technical program chairman is W. M. Stacey, Jr. (ANL, Ill.).

The meeting will feature innovative mathematical and computational methods for solving problems in nuclear engineering. Session topics include radiation transport, multidimensional static diffusion theory, multidimensional diffusion and transport theory dynamics, mechanics problems in reactors, application of optimal control theory to reactors, code systems and system software, environmental and economic modeling of nuclear plants, and a workshop on computer code exchange. All the sessions except the one on mechanics will present invited and contributed papers, and several will feature panel discussions.

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The deadline for submitting abstracts for the *International Symposium on Radiation Physics* to be held November 30 to December 4, 1974 at the Bose Institute, Calcutta, India, has been set for September 15, 1974. They should be sent to Prof. A. M. Ghose, Head, Department of Physics, Bose Institute, Calcutta-700009, India. Papers may be contributed on the following topics: Interactions of gamma rays; neutron transport in bulk media; shielding of medium energy charged particle accelerators; and radiation dosimetry and instrumentation.

In addition to contributed papers, a number of invited review papers on subject matter of the Symposium, along with a few semi-technical lectures on related areas are proposed to be delivered during the sessions. Keynote addresses on various topics will be delivered by: Robert Hofstadter (Nobel Laureate), Stanford University, California; G. Drexler, Institute ür Strahlenschutz, Germany; Y. Furuta, Japan Atomic Energy Research Institute; A. M. Ghose, Bose Institute, Calcutta; T. Hyodo, Kyoto University, Japan; John H. Hubbell, Center for Radiation Research, National Bureau of Standards, Washington, D.C.; P.K. Iyenger, Bhabha Atomic Research Centre, Trombay, India; L. S. Kothari, Delhi University, Delhi, India; S. Makra, Central Research Institute for Physics, Hungarian Academy of Sciences, Budapest, Hungary; A. B. Smith, Argonne National Laboratory, Illinois; and D. K. Trubey, Radiation Shielding Information Center, Oak Ridge National Laboratory, Tennessee.

Abstracts of papers, preferably written in English, should be sent by September 15, 1974, indicating the subject category on the top left hand side of the abstract. The abstracts should be limited to 300 words. Complete papers should reach Calcutta by November 1, 1974.

VISITORS TO RSIC

Visitors to RSIC during the month of July were: S. J. Cipollo, Creighton University, Omaha, Neb.; J. Dagan, St. Luke's Hospital, New York, N.Y.; F. D. McDaniel, North Texas State University, Denton, Tex.; Y. Miura, University of California, Santa Barbara, Calif.; E. Schmidt; Euratom, Ispra, Italy; I. Tag (Egypt), at present with the Reactor Division, ORNL; J. Owings and J. Taylor, Computer Sciences Div., Union Carbide Nuclear Div. S. C. Roy, Bose Institute, Calcutta, India.

PERSONAL ITEMS

Captain Dean C. Kaul, USAF, former Radiation Transport Project Officer in the Radiation Directorate (STRA), Tactical Nuclear Division (RATN), of Headquarters, Defense Nuclear Agency (DNA) has retired from the Air Force. He has accepted a position as staff scientist in nuclear technical applications in the Chicago office of Science Applications, Inc. (SAI). His DNA responsibilities have been assumed by *Captain Ronald G. Powell*, USAF, who came to Headquarters from the Air Force Weapons Laboratory, Kirtland Air Force Base, New Mexico.

Marion L. Weiss, Breeder Reactor Operations of the General Electric Company, Sunnyvale, California, has accepted a guest assignment to the Oak Ridge National Laboratory to work for one year on shielding calculations in support of both experimental and detailed design of the breeder reactor.

A change of address has called to our attention that *Art Reetz* is now with NASA's Outer Planets Mission at Headquarters.

Linda Nickel, a student from Illinois College, Jacksonville, Illinois, is an RSIC summer participant under sponsorship of Oak Ridge Associated Universities (ORAU). She is working on the checkout of the BMT neutron moments code of C. R. Weisbin of Oak Ridge National Laboratory and P. D. Soran of Los Alamos Scientific Laboratory.

The following changes of address are noted: *Dr. Michael Weinert*, from Institut für Strahlenschutz, Stohl, to Munster, West Germany; *Dr. Paul S. Pickard*, from the University of Illinois to Reactor Study Division, Sandia Laboratories, Albuquerque, New Mexico.

RSIC welcomed a new staff member July 1 in the person of *Ms. Ellen Berrier* who will assist in the myriad details connected with secretarial work in an information analysis center.

JULY 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.

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