RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

POST OFFICE BOX X •
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No. 152 *August 1977*

DECISION is a sharp knife that cuts clean and straight; indecision a dull one that hacks and tears and leaves ragged edges behind it. . . . *Anonymous*

SEMINAR-WORKSHOPS IN SHIELDING?

"The various seminars and workshops conducted by RSIC in the past have been powerful educational tools in disseminating state-of-the-art expertise in the shielding community. We detect a slackening off of the effort in this direction. . . " So reads the report of the Ad Hoc Review Committee (Goldstein, Hampel, Lahti), and it continues, "There are still plenty of areas in shielding where educational endeavors would be very profitable–e.g. sensitivity calculations, and even the preparation and use of multigroup data sets." The committee urged RSIC to continue and to increase its efforts in holding seminars and workshops.

Do you agree?

We make the following two proposals—and we append a form at the end of this newsletter for your reaction on each, and/or your counter proposal if you have more useful suggestions. **Please respond immediately so that we may report further in the next issue of the RSIC Newsletter.**

MULTIGROUP CROSS SECTIONS—SEMINAR-WORKSHOP I, MARCH 1978

The seminar portion of the meeting would be devoted to presentations by the specialists on the current status of multigroup cross section generation capabilities. Oral presentations would be given and a written document would be compiled and published as a state-of-the-art report on the subject, similar to that published as a result of the 1969 seminar-workshop under the title, "A Review of Multigroup Nuclear Cross Section Preparation—Theory, Techniques, and Computer Codes," ORNL-RSIC-27.

The workshop portion of the meeting could follow either of the following formats: (a) focus on a particular multigroup cross section generating code with the goal of conveying an understanding of how to use it for generating your own multigroup data libraries; or (b) give the user a working knowledge of the various cross section handling codes available for retrieval, editing, merging, self-shielding, group collapsing, etc., to allow the user to derive his own problem dependent data set from available multigroup libraries in very flexible formats.

Please turn to last page of this newsletter and give us the benefit of your thinking on SEMINAR-WORKSHOP I.

SENSITIVITY AND UNCERTAINTY METHODOLOGY—SEMINAR-WORKSHOP II, MIDSUMMER 1978

The seminar portion would include presentations by the experts on the theory and the tools used to study the relationships between nuclear reaction cross sections and their uncertainties, integral experiments and their uncertainties, and reactor performance parameter predictions and their uncertainties. Again, the seminar would be planned with the idea of a review of the state-of-the-art in sensitivity and uncertainty methodology and the compiled papers would be published. The workshop portion could concern itself only with the one-dimensional problem, and would focus on one of the available calculational systems and cross section data libraries.

Your comments, suggestions, and/or counter proposals are earnestly solicited. Turn to last page, this newsletter, and give us your response immediately concerning this proposal for SEMINAR-WORKSHOP II.

TOPICAL MEETING ON ADVANCES IN REACTOR PHYSICS SCHEDULED

The meeting is scheduled for April 9–13, 1978, in Gatlinburg, Tennessee, and is sponsored by the ANS Reactor Physics Division, the ANS Oak Ridge Section, Oak Ridge National Laboratory, the University of Tennessee, and the U. S. Energy Research and Development Administration.

The main purpose of the meeting is to present recent physics-related developments in reactor design, nuclear data, and calculational methods. Both thermal and fast reactors will be considered, with emphasis on the close interaction and involvement of reactor physics in the design process. Sessions will include:

1. **Nuclear Data for Design**– Assessment of evaluated nuclear data files via benchmark calculations (including sensitivity studies and cost/benefits of basic data measurements.)
2. **Design Methods** – Computational procedures for multidimensional core analysis (space time kinetics, coarse mesh techniques, etc.).
3. **Nuclear Data for Design** – Use of integral data in the development of data libraries and design methods (including pros and cons of data adjustment).
4. **Design Methods**—Feedback of reactor operating data to methods development.
5. **Physics Developments in the Design of Power Reactors** – Thermal and intermediate spectrum applications (alternate fuel systems, advanced converters, high burnup cores, etc.).
6. **Physics Developments in the Design of Power Reactors** — Fast spectrum applications (alternate fuel systems, heterogeneous cores, low sodium coefficients, etc.).

Deadline for 600-word summary and 150-word abstract: November 1, 1977. Final paper deadline: March 27, 1978. Send to Technical Program Chairman, P. B. Hemmig, Division of Reactor Development and Demonstration, USERDA, Washington, D.C. 20545.

CODATA CONFERENCE IN ITALY IN 1978

The International Council of Scientific Unions (ICSU) Committee on Data for Science and Technology (CODATA) has announced that the Sixth International CODATA Conference will be held May 22–25, 1978 in Taormina, Italy at the invitation of the Consiglio Nationale delle Ricerche. CODATA is an interdisciplinary Committee of ICSU, which deals with data of importance to science and technology, their compilation, critical evaluation, storage and retrieval. Its scope includes quantitative data on the properties and behavior of matter, characteristics of biological and geological systems, and other experimental and observational data. CODATA covers all disciplines represented with the member Unions of ICSU, i.e. the physical sciences, astronomy, the geosciences and the life sciences, but CODATA's activities concentrate on problems which are common to the various disciplines. Its purpose is to promote data compilation and evaluation, to improve the quality of data collections and their usefulness to the user community, and to improve data accessibility.

The scope of the 1978 Conference will include the following aspects: data evaluation methodology; compilation procedures; critical evaluation; mathematical modelling data requirements; correlation, extrapolation, and estimation procedures; data systems analysis; and machine techniques for storage, retrieval, and dissemination of numerical data. Part of the Conference will be devoted to data relevant to the quality of life and the environment, in particular, preservation of natural ecosystems, prediction of natural disasters, and prevention of man-made hazards, bearing in mind the important data files already in existence. It is tentatively planned to have public lectures of general interest on some of the topics with emphasis on the local seismic and volcanic environment.

The call for papers is issued as follows. Users of data, as well as those involved in data compilation, data evaluation, and data handling are invited to submit papers on subjects within the scope of the Conference. The title, together with a brief description of the contents of the paper should be submitted as soon as possible, but not later than **October 1, 1977** to the Co-Chairman of the Program Committee, J. E. Dubois, Centre d'Informatique et de Documentation Automatique (CIDA), 1, rue Guy de la Brosse, 75005 Paris, France. Authors of papers will be notified before December 1, 1977, about the acceptance of their papers and will receive instructions on providing an abstract at that time.

The Proceedings of the Conference will be published in the CODATA Bulletin, the principal publication medium of CODATA.

The Scientific Program Committee includes: Co-Chairmen - M. Carapezza (Italy) and J. E. Dubois (France); Robert E. Harte and Alan Shapley (U.S.A.); and V. V. Sytchev (U.S.S.R.). Current Executive Committee members of CODATA are: President: P. Melchior; Vice-Presidents: T. Plebanski and T. Shimanouchi; Secretary-General: E. F. Westrum, Jr.; Treasurer: N. Kurti; Members: P. L. Altman (IUBS), J. E. Dubois (France), H. Gutfreund (IUB and IUPAB), W. W. Hutchison (IUGS), R. N. Jones (IUPAC), C. N. R. Rao (India), M. Schoenberg (FRG), and V. V. Sytchev (USSR).

Further information is available from: CODATA Secretariat, 51 Boulevard de Montmorency, 75016 Paris, France.

OTHER UPCOMING CONFERENCES

Alternative Technologies of Electric Power Generation: Their Overall Fuel Cycles and Environmental Effects is the topic chosen for the Fifth Annual Conference on Environmental Issues in Electric Power Generation to be held on the Berkeley Campus, University of California on August 29 - September 2, 1977. The University is sponsor in cooperation with the Electric Power Research Institute, Palo Alto. Additional information is available from the University College of Engineering.

Georgia Institute of Technology again offers continuing education courses in Nuclear Power Management on September 19–23, 1977. There will be five days of lectures, class discussions and solutions of illustrative problems. The topics include: *Concepts and Terminology of Nuclear Reactors, Reactor Management, Introduction to the Fuel Cycle, Power Economics, Fuel Cycle Economics, Environmental Aspects of Nuclear Power, Radiation Protection in a Nuclear Facility, Optimization in Power Management, Personnel Management, Managerial Aspects, Licensing and Safety Procedures,* and *Advanced Reactors.*

MONTE CARLO ANALYSIS COURSE SCHEDULED

A course (designated as TIW 12 - No. 27), entitled "An Engineering Approach to Monte Carlo Analysis," will be offered by the Nuclear Engineering Department of the University of Tennessee, September 12–16. This course is designed specifically for the practicing engineer engaged in shield design and does not presume any prior knowledge of Monte Carlo methods. An understanding of the basics of Monte Carlo methods is emphasized along with their specialized application to practical shielding problems. The versatile Monte Carlo computer code, MORSE, will be described. Workshop sessions are planned to enable participants to acquire some practical experience. Acquisition of the correct Monte Carlo code and/or the appropriate cross section data for your job will also be discussed. Participants need not be familiar with the Monte Carlo methods. However, some understanding of radiation-transport physics and computer programming is desirable. For information, contact the Dean of Engineering, 124 Perkins Hall, Knoxville, Tennessee 37916, 615-974-5321.

ANS LEADERS ANNOUNCED

Several persons whose work falls in radiation protection, radiation transport, and shielding or in allied areas, have become actively involved in the work of the American Nuclear Society (ANS) and give leadership to the Society as a whole or to its divisions. An announcement has been made of the leadership spots that were filled during the June annual meeting. Gail de P. Burke, (RP&S Executive Committee member) Radiation Physics Division, ERDA's Health and Safety Laboratory, NYC, was elected to a three-year term on the ANS Board of Directors. Other Radiation Protection and Shielding Division members were elected as division officers and committee members in June:

Radiation Protection and Shielding—Chairman, Wilbur L. Bunch, HEDL, Richland, Washington; vice chairman, Siegfried A. W. Gerstl, LASL, Los Alamos, N.M.; secretary, Nancy B. Willoughby, Bechtel,

Gaithersburg, MD; treasurer, Gerald P. Lahti, Sargent & Lundy, Chicago, Ill.; executive committee: Michael J. Kolar, Gilbert Commonwealth, Jackson, MI; Robert W. Roussin, RSIC; and W. Reed Johnson, University of Virginia, Charlottesville, VA.

Reactor Physics—Chairman, Michael J. Driscoll; vice chairman, Robert E. Heineman; secretary, Martin Becker; treasurer, Donald R. Harris; executive committee: Rudolph Sher, H. Sterling Bailey, Phillip B. Hemmig, Michael J. Lineberry.

Controlled Nuclear Fusion—Chairman, Don Steiner; vice chairman, W. M. Stacey, Jr.; secretary/treasurer, William G. Price, Jr.; executive committee: Daniel Klein, W. C. Wolkenhauer, S. Burnett.

Environmental Sciences—Chairman, Clyde P. Jupiter; vice chairman, Thomas H. Row; secretary, Michael W. Golay; treasurer, Kurt D. Anderson; executive committee: Zolin G. Burson, Douglas C. Hunt, Frank D. O'Brien.

Mathematics and Computation—Chairman, Henry C. Honeck; vice chairman, William H. Reed; secretary, Harold L. Dobbs, Jr.; treasurer, Robert M. Westfall; executive committee: John E. Meyer, Donald S. Rowe, Edward Garelis.

Nuclear Criticality Safety—Chairman, G. Elliott Whitesides; vice chairman, Donald L. Dunaway; secretary/treasurer, Ricardo Artigas; executive committee: Deanne Dickinson, Dale R. Oden, Jr., William G. Morrison.

NEW STANDARDS WORKING GROUP CHAIRMEN IN ANS-6

In a rotation of chairmen, Jack Celnik of Burns and Roe and Mike Kolar of Commonwealth Associates, Inc., have recently become leaders of Working Groups ANS-6.2, Benchmark Problems, and ANS-6.4, Shielding Materials. Lee Simmons of Science Applications, Inc. and Barney Engholm of General Atomic have led these groups since ANS-6 was reorganized in 1972. The subcommittee ANS-6, Radiation Protection and Shielding, is a unit of the American Nuclear Society Standards Committee and is sponsored by the Radiation Protection and Shielding Division of the Society. It has eight major working groups.

"We want to express our gratitude on behalf of the whole radiation protection and shielding community to Lee and Barney for their dedicated service and hard work which has advanced the state-of-the-art through the development of useful standards. We wish to congratulate Jack and Mike on their appointments and look forward to new developments in their respective areas."

– D. K. Trubey, ANS-6 Chairman

NUCLEAR STANDARDS PUBLICATIONS ANNOUNCED

Several documents concerned with nuclear standards have recently been announced as available.

The American National Metric Council (ANMC) announces publication of *ANMCs Guidelines for Writers of SI Metric Standards and Other Documents*. The Guidelines are designed to assist technical writers in converting old documents to the metric system and writing new metric documents. A useful reference included in the Guidelines is the Metric Editorial Guide. Order copies from ANMC, 1625 Massachusetts Ave., N.W., Washington, D.C. 20036. Rates are: 1–9 copies, $7.50 (subscribers), $10 (nonsubscribers); 10 or more copies, $6 (subscribers), $9 (nonsubscribers).

Compilation of ASTM Standard Definitions, recently published by the *American Society for Testing and Materials (ASTM)*, contains more than 13,000 definitions found in ASTM standards. The technical terms listed in this 732 page, hard cover volume are not commonly found in dictionaries. Available at ASTM, 1916 Race St., Philadelphia, PA 19103 at $24.75 per single copy. Shipping rates: Domestic – add 3%; Foreign – add 5%.

Newly Published ANSI/ANS-15.11 - 1977, Radiological Control at Research Reactor Facilities (formerly N628) (new standard). Order from ANS, price: $12.00.

Standards and Practices for Instrumentation. (Fifth Edition, published by the *Instrument Society of America.*) This new and revised edition provides a guide to nationally and internationally accepted practices in instrumentation design and usage, with information on terminology, design, specification, selection, application, measurement, and testing.

Included in the volume are complete texts of all 45 current ISA Standards and Recommended Practices; titles and abstracts of 750 instrumentation-related standards developed by 62 U.S. organizations; titles of 214 internationally accepted standards developed by IEC, ISO, and COPANT; a directory of 91 worldwide standards-writing organizations; and purchasing information on all standards. All information is indexed by subject for quick reference. (Hardbound 930 pages. ISA members: $80; nonmembers: $100. Order from Publications, ISA, 400 Stanwix St., Pittsburgh, PA. 15222. In Europe: John Wiley & Sons Ltd., Baffins Lane, Chichester, Sussex. P019 1UD, England. In Asia: Intercontinental Marketing Corp., IPO Box 5056, Tokyo 100-31, Japan.)

Standards Cross-Reference List. (Second Edition, prepared by *MTS Systems Corporation.*) This updated and enlarged edition provides cross references of standards written by 82 agencies, such as ASTM, ANS, SAE, NEMA, CSA, ISO, and IEC. It is designed to aid researchers, engineers, technicians, and librarians in locating specific voluntary standards that are assigned new designations by each agency adopting them. (Paperbound, 128 pages. $10 prepaid; $12 invoiced. Order from MTS Corporation, Information Services, P. O. Box 24012, Minneapolis, MN 55424.)

CURRENT WORK AND PROBLEMS

We are pleased to have members of the RSIC user community supply information about their institutions and work. We share the information with our readers so that individuals and/or groups may communicate with each other in areas of common interest. We urge our readers to use the Newsletter for such communication and sharing.

M. Metghalchi, Shielding Group, Reactor Technology Department, Nuclear Research Centre, Tehran, Iran, has given the following information concerning work in RSIC's subject areas.

"The Tehran Nuclear Research Centre of Iran is a very young institution, established two years ago. Some fundamental applied research in atomic and nuclear fields have been started. Shielding research is done as part of activities in the Reactor Technology Section. Three researchers and one foreign expert work in the shielding group. So far, some fundamental and applied theoretical works in this field have been carried out. Two shielding codes are being used, SABINE-3 and ANISN, to do some applied calculations for their 5 MW pooltype research reactor and also for IRAN-1 and IRAN-2 power reactors. The results of the studies in all topics of shielding will be published."

Z. M. Khalid, Nuclear Engineering Division, Pakistan Institute of Nuclear Science & Technology, at Rawalpindi, writes as follows.

"For the past few years we have been interested in the measurement of the neutron spectra both in the intermediate and high energy regions in the Pakistan Research Reactor PARR. We have already completed these measurements for the neutron spectra leaking from reactor core in order to be able to use this information for irradiation and radiation shielding purposes. The foil activation technique using gamma ray spectrum analysis has been used. The spectrum unfolding in the fast region has been carried out using the RDMM and SPECTRA codes while in the intermediate range resonance activation method has been employed. Presently we are planning to use the resonance detectors in the sandwich form, in the energy range 1 eV – 400 eV."

PERSONAL ITEMS

The following changes of address were received during the month.

SAI's Thomas E. Albert has moved from Huntsville, Ala. to La Jolla, CA. Walter Mitchell, III, formerly of NUS, is now listed as Executive Vice President, Southern Science Applications, Inc., Dunedin, FLA.

SHIELDING REFERENCE MATERIAL AVAILABLE

Are you building a reference shelf to support your radiation transport and shielding work? We have lost some storage space and must dispose of copies of several ORNL-RSIC reports. We offer the following as long as the supply lasts.

ORNL-RSIC-5, ***Bibliography, Subject Index, and Author Index of the Literature Examined by the Radiation Shielding Information Center (Reactor and Weapons Shielding).*** The series includes the literature reviewed over a 14 year period, with each volume of the series beginning where the previous one left off. We

have only microfiche copies of *Volume I*; but have a good supply of *Volumes II, III, and IV*. We expect to publish the next volume in the series in the next few months and, because of cost and space restrictions, will publish only a limited number of copies. Those persons who wish to add to the series on your reference shelf are advised to request now that a personal copy be reserved. Your requests for *Volume V* will help us determine the number that must be printed.

ORNL-RSIC-13, ***Abstracts of Digital Computer Codes Assembled by the Radiation Shielding Information Center.*** Again, this is a series published in loose-leaf notebook form for ease in changing. Copies of *Volumes I and II* contain descriptions of computer code packages of several years vintage – several of which remain "alive and well" through usage and the RSIC "Open Code Package" treatment. Complete copies are available now in microfiche only, but several copies of updated material are available. We are well supplied with copies of *Volumes III and IV*, which contain descriptions of the latest computing technology packaged. A complete update of the abstracts of all the "living" technology in the collection will be made as soon as possible, hopefully within the next fiscal year.

ORNL-RSIC-19, ***A Review of the Discrete Ordinates S_n Method of Radiation Transport Calculations.*** Although the review was written several years ago and is somewhat dated, the information has value as a reference. It is possible that a new review is in order.

ORNL-RSIC-23, ***A Survey of Recent Soviet Radiation Shielding Work.*** This material is also dated (1968 review), but might be of some interest to those who follow all shielding literature. More recent Soviet publications which we have seen in the normal course of literature review have been cited in the general RSIC literature databases.

ORNL-RSIC-25, ***Shielding Benchmark Problems.*** This loose-leaf bound volume contains several "benchmark" problems for testing computational methods of radiation transport selected by the Benchmark Problems Group of the ANS-6 Standards Committee. The current problem set includes: A. E. Profio's *Fast Neutron Spectrum from a Point Fission Source in Infinite Graphite;* H. L. Beck's *Gamma-Ray Spectrum from a Point ^{137}Cs Source in Infinite Water;* E. A. Straker's *Neutron Spectrum from Point Fission and 14 MeV Sources in Infinite Air;* C. W. Garrett's *Gamma-Ray Dose Above a Plane Source of ^{60}Co on an Air-Ground Interface;* T. W. Armstrong and R. G. Alsmiller's *The Nucleon-Meson Cascade in Iron Induced by 1- and 3-GeV Protons;* C. E. Burgart's *Neutron and Secondary Gamma-Ray Fluence Transmitted Through a Slab of Borated Polyethylene;* and R. E. Maerker, F. J. Muckenthaler, R. L. Childs, and M. L. Gritzner's *A Benchmark Experiment and Calculation for Neutron Transport in Thick Sodium.* The Benchmark Problem Group (ANS-6.2), currently chaired by J. Celnik of Burns and Roe, will add new problems to the series as they are prepared. The first four problems were issued in the original publication, the last three as a supplement to update the original binder. Persons holding ORNL-RSIC-25 should check that they have the full set of seven problems. If not, write and ask for Supplements 1 and 2 of the report.

ORNL-RSIC-34, ***Defense Nuclear Agency Working Cross Section Library – Description and Contents.***

CHANGES IN THE COMPUTER CODE COLLECTION

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

CCC-48/QAD

A CDC version (CCC-48D) of the QAD-P5 portion of the General Purpose Radiation Transport Kernel Integration Code System has been contributed by NUS Corporation, Rockville, MD. QAD-P5, used extensively by the nuclear power industry, 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, 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, has been widely distributed, and is extensively used.

CCC-288/KENO IV

The CDC version (CCC-288B) was updated to include the sample problems and routines to process cross sections, albedos, and weights from the IBM 360 version (CCC-288A). KENO IV is a multigroup Monte Carlo criticality code system which is used to calculate k-effective, lifetime and generation time, energy-dependent leakages and absorptions, energy- and region-dependent fluxes and region-dependent fission densities; can do forward or adjoint calculations, dimension or array searches. The code system is a contribution of the UCC-ND Computer Sciences Division at the Oak Ridge National Laboratory.

The peripheral-to-shielding code collection was also changed.

PSR-106/PLASMX

This multigroup ionization and charge exchange cross section generation code for neutral hydrogen transport in plasmas was contributed by Los Alamos Scientific Laboratory. Reference: LA-6661-MS (January 1977). The output is a standard DTF-IV (CCC-42) format suitable for one- and two-dimensional cylindrical discrete ordinates transport codes, such as ONETRAN (CCC-266) and TWOTRAN (CCC-195). FORTRAN IV; CDC 6600/7600.

PSR-108/LEGENDRE FUNCTIONS

This package of routines using associated Legendre functions of the first kind and Legendre polynomials was contributed by Lawrence Livermore Laboratory. Reference: UCRL-52127 (January 1977). LRLTRAN converted by RSIC to run on the IBM 360 series computers.

CHANGES IN THE DATA LIBRARY COLLECTION

The following changes have been made to the data collection during July:

DLC-31/(DPL-1/FEWG1)

The DNA Few Group (37n,21g) Data Library package was updated to remove ARID, collapsing code and data format converter which has consistently given trouble in usage. The July Newsletter issue reported the addition to the package of LIBGEN, a card image-to-binary format conversion code, so ARID is no longer needed for this purpose. RSIC recommends the use of PSR-91/COMAND (a stand-alone AMPX module designed to collapse ANISN cross section libraries) for collapsing to fewer groups, if desired. No change to the data was made.

OVERVIEW OF ANS DATA SURVEY

The results of a survey to assess nuclear structure and charged particle data needs of the American Nuclear Society (ANS) Radiation Protection and Shielding Division (RP&SD) members have been reported by C. R. Weisbin (ORNL), Leona Stewart (LASL), and J. Gentry (ORNL). The survey was planned when, last November, L. Stewart and C. R. Weisbin were asked to represent this ANS division for 2 and 3 year periods on a newly created panel on reference nuclear data. A questionnaire was mailed to 890 members of RP&SD with particular emphasis on the usage and importance of several compilation and evaluation nuclear data programs already underway. Only 120 replies were received (~13% of the total queried) which were overwhelmingly from the neutron transport community. The Chart of the Nuclides and the Table of Isotopes received the highest ratings but both were heavily criticized for being out of date and the chart for no longer being available. Updating of these and other compilations seemed to be given the most importance or highest ranking.

A definite need was cited for simplicity and ease of use of current publications and consistency of format presentation. The suggestion of a newsletter to advise availability/cost of nuclear data reference material was enthusiastically received. Specific data and applications most often used are: half-lives of radioactive

substances, energies and intensities of gamma rays, nuclear decay modes, and isotopic abundances. Most of the additional information requested were for neutron cross sections such as dosimetry, activation, and for high energy data. In general, the need for evaluated data rated about 20% higher than for experimental information. Many different computer codes are being used for nuclear data applications; they vary widely in scope and format.

Only a few suggestions were received for undertaking compilation and/or evaluation programs not currently in progress. The results of the nuclear data compilation program used in the poll are summarized below: the percentages listed are based on adding the "top" and "next to top" most often used ratings; Chart of the Nuclides (88%), Table of Isotopes (73%), Gamma-ray Spectrum Catalog (46%), Nuclear Data Sets (44%), Nuclide Tables, Handbook of Chemistry and Physics (31%), Recent References (24%), Energy Levels of Light Nuclides (23%), Charged Particle Reaction List (11%), Charged Particle Cross Sections, Z = 1-9(10%), Other (15%).

The results of the complete survey are available upon request from: S. A. Gerstl, Vice President of Radiation Protection and Shielding Division, M.S. 269, Los Alamos Scientific Laboratory, Los Alamos, NM 87545.

For those persons concerned with unavailability and/or updates of the two reference sources which received the highest rating, the following information was furnished by L. Stewart and N. Holden (BNL).

1. **Chart of the Nuclides** - New charts are expected to be available for distribution by the end of this calendar year. The source: Educational Relations, General Electric Company, Schenectady, New York 12345.
2. **Table of Isotopes** - The completed work will be submitted to the printer by the end of this year by the publisher, John Wiley and Sons.

VISITORS TO RSIC

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

Gerald E. Bosler, Los Alamos Scientific Laboratory, Los Alamos, NM; Georg Burger, Institut fur Strahlenschutz, Munchen, Germany; David L. Chapin, Westinghouse Fusion Power Systems, Pittsburgh, PA; Y. Gohar, Argonne National Laboratory, Argonne, Ill.; Ferenc Hajnal, US ERDA, HASL, New York, NY; Charles Head and Bruce Twining, ERDA, Magnetic Fusion Energy Division, Washington, D.C.; Robert S. Howell, and Bernard Weber, Science Applications, Inc., Oak Ridge, TN; Jung Chung Jung, Argonne National Laboratory, Argonne, Ill.; Long-poe Ku, Princeton Plasma Physics Laboratory, Princeton, NJ; Richard Lemon, ORAU, Oak Ridge, TN; Bob R. Leonard, Jr., Battelle Northwest, Richland, Washington; Charles W. Maynard, University of Wisconsin, Madison, WI; T. A. Parish, University of Texas, Austin, Texas; and Michael C. Stauber, Grumman Aerospace Corporation, Bethpage, NY.

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.

REACTOR AND WEAPONS RADIATION SHIELDING LITERATURE

AD-A-026167
Neutron Spectrum Measurements at the White Sands Missile Range Fast Burst Reactor (FBR).
Wright, H.L.; Meason, J.L.; Harvey, J.I.
1976
NTIS $3.50

AD-A-028342
Computer Program to Synthesize Backscattering Spectra for Samples Composed of Successive Layers of Uniform Thickness and Composition. Interim Technical Report.
Borgesen, P.; Harris, J.M.; Scherzer, B.M.U.
June 1976
NTIS $5.50

AFWL-TR-73-222; AD-A-032409
Skylab II: Radiation Dosimetry Systems and Flight Results. Final Report.
Ainsworth, G.C.; Schneider, M.F.; Janni, J.F.; Grimm, A.D.
September 1976
NTIS

AEOI-21
Radiation Self-Attenuation of Nuclear Power Sources.
Taherzadeh, M.
January 1976
Atomic Energy Organization of Iran, Teheran

AERE-R-8522
A Systematic Approach to the Radiation Damage Problem in Reactor Materials.
Bullough, R.; Eyre, B.L.; Kulcinski, G.L.
September 1976
UKAEA Research Group, Harwell

ANL/NDM-30
Analysis of the Sensitivity of Spectrum-Average Cross Sections to Individual Characteristics of Differential Excitation Functions.
Smith, D.L.
March 1977
Dep., NTIS

BAW-10113A
THOR: Thermal Cross Section Generation Code Using ENDF/B Data.
Andrews, J.B.,II; Hassan, N.M.; Wittkopf, W.A.
February 1977
Babcock and Wilcox, Lynchburg, VA

BNL-NCS-50605
Isotopic Composition of the Elements and Their Variation in Nature: A Preliminary Report.
Holden, N.E.
March 1977
NTIS $4.00

BNWL-2020
Methodology for Estimating Radiation Doses Due to Tritium and Radiocarbon Releases.
Baker, D.A.; Soldat, J.K.
September 1976
NTIS $5.00

BRL-MR-2759
Calculated Energy Dependence of Neutron Induced Displacement Damage in Silicon.
Youngblood, J.E.; Van Antwerp, W.R.
June 1977
NTIS

CEA-R-4726 (In French); Thesis
Theoretical Methods for Neutronics Calculations of Core-Blanket and Core-Reflector Systems in Fast Reactors.
Corcuera, R.
December 1975
Chef du Service Central de, Documentation du CEA, CEN de Saclay, Boite Postale No.2, F-91190 Gif-sur-Yvette

CONF-7509129-142; AED-Conf-75-769-106
Basic Principles of Nuclear Physics in Radiation Measurement and Radiation Shielding.
Rottler, A.
1975
Dep., NTIS (U.S. Sales Only)

CONF-770304-12
Current Trends in Methods for Neutron Diffusion Calculations.
Adams, C.H.
1977
Dep., NTIS

GA-A-14236
Gas-Cooled Fast Breeder Reactor Shielding Benchmark Calculation.
Rouse, C.A.; Mathews, D.R.; Koch, P.K.
January 1977
Dep., NTIS

IAEA-CN-36/484; CONF-770505-299
Regulatory Requirements for Radiation Protection.
Mason, E.A.; Cunningham, R.E.; Hard, J.E.; Mattson, R.J.; Smith, R.D.; Peterson, H.T.,Jr.
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RSIC SEMINAR WORKSHOP PROPOSALS FOR FY 1978

Person Responding _____
(Name) (Installation)

Address: _____ Telephone: _____

A. SEMINAR-WORKSHOP I: MULTIGROUP CROSS SECTIONS

Is it needed?_____Will you attend seminar?_____And workshop?_____ (Give preference of a - d below)

Do you wish to give a paper?_____If so, give suggested title or brief summary:

_____

_____

Please give your comments on the following: a) Workshop on a selected multigroup cross section code system: _____

b) Workshop on manipulating multigroup data libraries in flexible formats to derive problem dependent sets: _____

c) A combination of a-and-b: _____

d) Other. Please specify: _____

GENERAL COMMENTS ON SEMINAR-WORKSHOP I:

_____

_____

B. SEMINAR-WORKSHOP II: SENSITIVITY AND UNCERTAINTY METHODOLOGY

Is it needed?_____Will you attend seminar?_____And workshop?_____

Do you wish to give a paper?_____If so, give suggested title: _____

_____

_____

What would you like to have included in the seminar? _____

_____

_____

What would you like to have covered in the workshop? _____

_____

_____

GENERAL COMMENTS ON SEMINAR-WORKSHOP II:

(Please fill out, fold and mail to address on other side of form).

Betty F. Maskewitz
RSIC Seminar-Workshops
Oak Ridge National Laboratory
Post Office Box X
Oak Ridge, Tennessee 37830
U. S. A.