RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

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

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The man who has accomplished
all that he thinks worthwhile,
has begun to die.

- E. T. Trigg

PUBLIC INFORMATION ON ENERGY

An increased upsurge of interest in information on nuclear energy (in layman's language) is taxing the normal information resources, including RSIC. There are many calls for information on nuclear energy from individual students, schools and voluntary organizations. An RSIC staff member is working on a volunteer basis to assist a national lay organization to find suitable materials and to form study groups in regional areas.

The AEC now offers a Citizens Workshop, which is much in demand. It is directed toward stimulating additional and more informed citizen involvement in decision making in local, state, and national affairs. The workshop explains the nature of our energy problems and the environmental effects of producing and using energy. This discussion includes various aspects of coal, oil and gas utilization, as well as prospects for nuclear and solar energy use in the production of electric power. The participants use a specially designed Energy-Environment Simulator to play a decision-making game that illustrates the problem of keeping energy production in balance with the steadily increasing demand for energy while also maintaining the quality of the environment. Finally, there is a round-table discussion involving technical experts from universities, research institutions and similar organizations, and the audience.

The entire program can take from one and one-half to three hours and more than one program can be scheduled daily. A workshop can be made available for as many as five consecutive days when justified by interest and other factors. The format is flexible and can be modified to fit the interest and background of each audience. Individuals interested in sponsoring a workshop may contact Charles W. Pelzer, Assistant Director for Educational Services, Office of Information Services, U. S. Atomic Energy Commission, Washington, D.C. 20545, telephone:area code 301-973-4357.

RSIC PAPERS RECENTLY GIVEN

A paper on RSIC services to the controlled thermonuclear research community was given by R. W. Roussin at the fusion research topical meeting held in April in San Diego. B. F. Maskewitz described RSIC coverage of shielding materials to

the Interagency Council for Materials and its Working Group on Materials Information and Data held at the National Bureau of Standards on April 16-17. Proceedings of both conferences will be published. Copies of the RSIC papers can be made available on demand.

EUROPEAN NUCLEAR SOCIETY CONFERENCE PLANNED FOR 1975

The European Nuclear Society (ENS)/American Nuclear Society (ANS) have announced the First European Nuclear Conference to be held on April 21-25, 1975, in the Paris Convention Center, Paris, France. Professionals interested in nuclear energy, from all countries, are asked 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. Submissions must reach the Executive Office by October 1, 1974. MAILING ADDRESS: Mr. Pierre Zaleski, Executive Chairman, European Nuclear Conference, P.O. Box No. 27, 92140 Clamart, France. 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. Subject areas of coverage are:

Design and Construction of Nuclear Power Stations
Operating Experience
Fuel Performance
Fuel Management
Nuclear Safety and Protection
Quality Assurance and Reliability for Components and Fuel
Fuel Fabrication
Reprocessing, Transport, and Waste
Low- and High-Temperature Process Heat

NUCLEAR INDUSTRIES TO CONVENE IN SWITZERLAND

Invitations are being issued to attend Nuclex 75: 4th International Fair and Technical Meetings of Nuclear Industries to be held October 7-11, 1975, in the halls of the Swiss Industries Fair in Basle. The theme of Nuclex 75 is "Nuclear Technology for Energy Production." Full information may be obtained from Secretariat Nuclex 75, Swiss Industries Fair, P.O. Box CH-4021, Basle, Switzerland. The following encapsulates the proposed technical meetings.

Technical Meetings

(The programme with full details on the Technical Meetings will be sent to you in Spring 1975.)

General Subject

Present status and perspective of nuclear technology in 1975

Programme

Opening Session
- Role of nuclear energy in covering energy needs in the near future.
- Experience gained and perspective of nuclear technology for electricity production.
- Nuclear fuel cycle industry – present status and future capability.

Technical Meetings
1. Fast Breeder Reactors – Experience gained and perspective of fast breeder technology with view to commercial energy production.
2. High Temperature Gas-cooled Reactors – Perspective of the thermal reactor concept with high thermal efficiency.
3. Proven Power Reactor Systems (AGR, BWR, HWR, PWR) -- novel features and developments in operation performance, safety and reliability.
4. Commercial Nuclear Power Plants in Operation (AGR, BWR, HWR, PWR) – Experience in construction and operation; reliability analysis of systems and components; improvements.
5. New aspects of Radiation Protection and Nuclear Safety Analysis; Development of Safety Concepts and Safety Systems.
6. Fuel Elements for Proven Power Reactor Systems – Performance and Development.
7. Development of Cooling Systems, Heat Use and Thermal Efficiency in Nuclear Power Plants.
8. Novel Features in Instrumentation and Automation for the Control of Nuclear Power Stations.

Special Colloquia

a) Materials for Nuclear Technology and Control of Nuclear Power Plants.
b) New Applications of Radioisotopes in Civil Engineering, Process Chemistry, Heavy Industry etc. and in Related Applied Sciences.
c) Electronics and Radiation Detection Techniques in Nuclear Engineering as well as in Instrumentation and Control of Nuclear Power Stations.
d) Novel Features in Treatment and Disposal of Radioactive Waste (gaseous, liquid and solid).

CHANGES TO THE CODE COLLECTION

Several changes were made during the month to the computer code collection.

CCC-132/ATTOW-K Multigroup Two-Dimensional Removal-Diffusion (Spinney Method) Shielding Code, contributed by Karlsruhe Nuclear Research Center, West Germany and UKAEA Risley, Warrington, Lancs., England. The earlier version of ATTOW, operable on the IBM 7090, was converted for the Karlsruhe IBM 360 and 370. ATTOW-K can utilize the Karlsruhe multigroup data sets in fast memory or from external storage. The SABINE removal cross section library is built into the code system. The input was partly reformulated and the documentation was updated. This version obsoletes the earlier version in the RSIC collection. FORTRAN IV. Reference: EUNFR-1138.

CCC-187/SAM-CE The Monte Carlo Time-Dependent Three-Dimensional Complex (Combinatorial) Geometry Code System has been updated to reflect the complete change of two subroutines, ARG and ARPREP, contributed by Mathematical Applications Group, Inc., Elmsford, N.Y. A special notice has been sent to known users of SAM CE. The two subroutines on cards or the complete code package may be requested (CCC-187A for the IBM 360 or -187B for the CDC 6600).

CCC-203/MORSE-CG Charles Slater, General Atomic Company, San Diego, called to RSIC attention a change to subroutine GENI in the combinatorial geometry package which improves the output listing. Current MORSE users may insert a card after card #9300 which reads IALP1=IALP, and change card #10100 to read MA(N)=IALP1. This will eliminate confusion when looking at the error messages given elsewhere in the geometry procedures. RSIC's package reflects the change.

CCC-213/ACRA II Estimation of Radiation Doses Caused by a Hypothetical Reactor Accident, code contributed by ORNL Operations Division. ACRA II replaces ACRA I, packaged in early 1973. It expands the capability of the calculation to include effects of fallout, washout, and ground contamination. The emission of nuclides to the atmosphere is described by a step function of time. FORTRAN IV, IBM 360. Reference: ORNL-TM-4082 and Informal Notes.

PSR-63/AMPX Modular Code System for Generating Coupled Multigroup Neutron Gamma-Ray Cross-Section Libraries from ENDF/B has been updated with the addition of a subroutine STUFW needed in the special case to generate anisotropic scattering matrices with a user-defined arbitrary input weighting function (IW=4).

ENERGY ABSORPTION CROSS SECTIONS IN MULTIGROUP LIBRARIES

Multigroup gamma-ray interaction cross sections generated with MUG or SMUG do not contain σ_a in table position 1. The quantity which is contained therein is an energy absorption cross section which has units of MeV-barns. This point has caused confusion to users who have tried to interpret position 1 as an absorption cross section. The absorption cross section is not used in the discrete ordinates codes and, therefore, transport codes results are not affected by the quantity in table position 1. Multigroup libraries distributed by RSIC which have this feature are DLC-9/FARS, DLC-11/RITTS, DLC-17/NOX, DLC-23/CASK, DLC-27/AMPX01, and DLC-28/CTR.

RSIC appreciates the cooperation of D. Fleischhammer, Brown, Boveri Company, Mannheim, Germany, in calling this matter to our attention.

CHANGES TO THE DNA WORKING CROSS SECTION LIBRARY

Recent modifications have been made to copper and magnesium. The April newsletter erroneously listed the latest update for copper as MOD 2. It should be called MOD 1.

The latest version of Mg is designated MAT 4512 MOD 1. The changes are summarized below.

Magnesium MAT 4512 SAI
MOD 1 April 1974

The excitation function for inelastic scattering to the continuum was increased by 150 mb at 14 MeV and, in a systematic way, for energies between 8 and 20 MeV. The additional cross section was subtracted from the (n,α) reaction cross section.

Secondary neutron energy distribution for inelastic scattering to the continuum were changed at 10 MeV and higher energies to those typical of a simple evaporation spectrum.

The above changes were motivated by comparisons to the LLL pulsed sphere measurements (R. J. Howerton, Private Communication, 1973).

PERSONAL ITEMS

Y. Higashihara, after five years' work at the Power Reactor and Nuclear Fuel Development Corporation, has returned to the Kawasaki Heavy Industries, Ltd., Tokyo, Japan. He is currently engaged in shielding and safety research in the Nuclear Power Research and Development Department.

The following changes in personnel have been made in the Nuclear Analysis Section at Burns and Roe. Bob Sullivan left to join the Environmental Protection Agency in Washington, D.C.; Jack Celnik, formerly with Gulf United Nuclear Corporation, is now with the firm.

Current communication from Duaine Lindstrom indicates that he is still in the Department of Nuclear Engineering, Imperial College, London, England. Instead of the usual tape box packing of 'old computer output' normally received by RSIC, Duaine used the current London newspapers, which were circulated and enjoyed by the RSIC staff.

V. R. Cain, a former member of the staff of the Oak Ridge National Laboratory Neutron Physics Division and the NSF-ORNL Environmental Program, has accepted a position with Bechtel Corporation in Gaithersburg, Maryland.

W. L. Thompson, formerly with the Reactor Facility, University of Virginia, Charlottesville, is now associated with the Los Alamos Scientific Laboratory in New Mexico.

NEW IN THE LITERATURE

Attention is called to the following ASTM publications, none of which are available from RSIC.

NUCLEAR REACTOR NEUTRON ENERGY SPECTRA, by C. Z. Serpan, Jr. and B. H. Menke, Naval Research Laboratory, Washington, D.C., ASTM publication code no.PCN 05-052000-35. It is available in soft cover for $26.00. This publication makes available information on the energy-level distribution of the neutrons. The information presented for each neutron spectrum in the compilation consists of a graphical representation of the integral neutron spectrum; a description of the reactor and environment plus dosimetry data (including measured fluxes and cross sections); and a computer listing of the lethargy and energy intervals plus the neutron spectrum normalized in two different ways.

Related ASTM publications are: "Analysis of Reactor Vessel Radiation Effects Surveillance Programs," STP 481 (1970), $26.00, PCN 04-481000-35; "Irradiation Effects on Structural Alloys for Nuclear Reactor Applications," STP 484 (1971), $49.25, PCN 04-484000-35; and "Effects of Radiation on Substructure and Mechanical Properties of Metals and Alloys," STP-529 (1973), $49.50, PCN 04-529000-35.

EFFECTS OF RADIATION ON SUBSTRUCTURE AND MECHANICAL PROPERTIES OF METALS AND ALLOYS, 548 pages, available in hard cover for $49.50, PCN 04-529000-35. To cover the important aspects of the general topic of radiation effects, 35 papers contributed by recognized experts from at least seven countries were carefully selected and arranged into six subject areas. The topics include (1) reactor vessel steels-fracture behavior, (2) reactor vessel steels-structure and impurity effects, (3) microstructural changes-neutron-induced voids and second phases, (4) microstructural changes-charged particle induced voids and computer experiments, (5) mechanical behavior-ductility, and (6) mechanical behavior-creep, fatigue, and tensile. Related ASTM publications are: "Irradiation Effects on Structural Alloys for Nuclear Reactor Applications," STP 484-(1971), $49.25 (04-484000-35);"Analysis of Reactor Vessel Radiation Effects Surveillance Programs," STP 481 (1970), $26.00 (04-481000-35); and "Irradiation Effects in Structural Alloys for Thermal and Fast Reactors," STP 457 (1970), $36.00 (04-457000-35).

These publications may be ordered from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

VISITORS TO RSIC

Visitors to RSIC during the month of April were: W. Belew, Allied General Nuclear Services, Barnwell, S. C.; J. Celnik, Burns & Roe, Inc., Oradell, N. J.; R. Cuniberti, European Shielding Information Service, EURATOM, Ispra, Italy; R. K. Disney, Westinghouse Advanced Reactors Division, Madison, Pa.; T. Hiraoka, JAERI, Tokyo, Japan; M. Nishikawa, Mitsubishi Atomic Power Industries, Inc., Omiya City, Japan; Y. Seki, JAERI, Tokyo, Japan; L. G. Rardon, Metals and Ceramics Div.,and Jim Turner, Health Physics Division, ORNL.

MAY ACCESSION OF LITERATURE

REACTOR AND WEAPONS SHIELDING

AEEW-M-1234
Thermal Average, Resonance Integral and Fission Spectrum Average Neutron Capture Cross Sections of Nuclides with Z=30 to 68.
Pope, A.L.; Story, J.S.
December, 1973
NTIS (U.S. Sales Only)

AERE-R-7487
Nuclear Accident Dosimetry. Part III. Interpretation and Data.
Delafield, H.J.; Dennis, J.A.; Gibson, J.A.B.
December, 1973
Dep., NTIS (U.S. Sales Only) $4.25; UK p 1.00

ANL-8052
Construction of a Finite Element Approximation Which Crosses Material Interfaces.
Leaf, G.K.; Lindeman, A.J.; Kaper, H.G.
January, 1974
NTIS $4.00

ANL/NDM-3
Neutron Scattering from Titanium; Compound and Direct Effects.
Barnard, E.; deVilliers, J.; Moldauer, P.; Reitmann, D.; Smith, A.; Whalen, J.
October, 1973
NTIS

AWRE-44-47-28
IAEA Regulations for the Safe Transport of Radicactive Materials. Check List.
Fairey, J.; Davies, W.H.L.; Reeves, L.G.
December, 1973
Dep., NTIS (U.S. Sales Only) $3.50; UK 50 pence

CEA-R-4524 (In French)
Measurement of Total Neutron Cross Sections of Fe, 11-B, C, Al, Si, S, Ti, V, Ni, 235-U, 238-U, 239-Pu in the Energy Range 100 keV to 6 MeV.
Cabe, J.; Cance, M.
November, 1973
Dep., NTIS (U.S. Sales Only) $4.25

CEX-73.1
Distribution Functions of Air-Scattered Gamma Rays Above Isotropic Plane Sources.
Michael, J.A.; Lamonds, H.A.
June, 1967
Dep., NTIS $10.60

CONF-710532-(Vol.1), pp.111-135
PWR Development for Nuclear Ship Propulsion. Shielding Studies and Control of the Gaseous Activity Release.
Chinaglia, B.
1972
Gesellschaft fuer Kernenergieverwertung in Schiffbau and Schiffahrt m.b.H., Hamburg (West Germany)

DL/P-190
Total Photon Cross Sections.
Gabathuler, E.
January,1974
Daresbury Lab., Daresbury, Great Britain

DP-1324
Survey of Experimentally Determined Neutron Cross Sections of the Actinides.
Benjamin, R.W.
December,1973
NTIS

EGG-1183-2298
Monte Carlo Characterization of the Near-Field Energy and Angular Distribution for the HENRE D-T Neutron Generator.
O'Dell, A.A.
October,1972
Dep., NTIS $4.00

FDA-74-8006
Physics of Diagnostic Radiology. Proceedings of a Summer School Held at Trinity University, San Antonio, Texas, July 12-17,1971.
Wright, D.J. (Ed.)
November,1973
NTIS

FDA-74-8008; CONF-730584
Fifth Annual National Conference on Radiation Control, Portland, Oregon, May 6-10,1973. Planning for Protection.
Bureau of Radiological Health, Rockville, Md.
October,1973
GPO

FXM-4929
Heat Generation in the Reactor Shield of the NJ-18A Powerplant.
Alessandro, L.P.
January 16,1961
Declassified September 20,1973
Dep., NTIS $3.00

GSF-P-36 (In German)
Temperature Curve Within the Concrete Shielding of the Dry Irradiation Chamber of the FRN After Breakdown of the Cooling System.
Rau, G.
January,1972
INIS

GULF-GA-A12499
Afterheat Calculations for the HTGR.
Sund, R.E.
November 1,1973
NTIS

IA-1275
Nuclear Data Evaluation for Plutonium-242.
Caner, M.; Yiftah, S.
February,1973
Dep., NTIS (U.S. Sales Only) $5.00

IA-1287
Multidimensional Numerical Transport by the Method of Characteristics.
Pinkelstein, L.; Segev, M.
August,1973
Dep., NTIS (U.S. Sales Only) $3.50

IA-1291
Self-Shielded Group Constants for Fast Reactor Calculations.
Gur, Y.; Yiftah, S.; Segev, M.
November,1973
Dep., NTIS (U.S. Sales Only) $10.00

ICP-1040
Fission Product Nuclear Data Requirements for the Determination of Nuclear Fuel Burnup: A Review.
Maeck, W.J.
January,1974
Allied Chemical Corp.

INDC(NDS)-57-U+F
Request Lists of Nuclear Data for Controlled Fusion Research as Submitted to the International Atomic Energy Agency by Member States.
Lemley, J.R. (Comp. and Ed.)
December,1973
Dep., NTIS (U.S. Sales Only) $6.75

INIS-mf-867
Radiation Shielding of the Proposed Thermal Research Reactor.
Chamany, B.F.
1973
INIS

IS-T-627; Thesis
Delayed Neutron Emission from Mass-Separated Fission Products.
Norman, J.H.
February,1974
Dep., NTIS $8.75

JAPFNR-129; PNC-J-250-73-19-2 Transl.
Revision of JAERI-FAST Set-1. Production of Fast Reactor Group Constants (I)-2.
Takano, H.; Hasegawa, A.; Katsuragi, S.
February,1974
NTIS

JINR-P16-7335 (In Russian)
Shielding from the Neutrons Generated in Targets by Protons with the Energy from 25 to 400 MeV.
Komochkov, M.M.
1973
Dep., NTIS (U.S. Sales Only) $3.00

KFKI-73-68
On the Recommended Values of (n, 2n) Cross Sections.
Jeki, L.
1973
NTIS

LA-5487-T; Thesis
Development of the OSO-6 High-Energy Neutron Detector and Correlation of Measured Solar Neutron Fluxes tc Solar Flares.
Young, F.
February,1974
Dep., NTIS $7.60

LA-DC-72-1412; CONF-721127-2
The 3-He(n,p)T, 6-Li(n,alpha)T, and 10-B(n,alpha) Standard Cross Sections.
Stewart, L.
November,1972
NTIS

ORNL-TM-3503
LMFBR Spent Fuel Transport: Parametric Studies.
Nichols, J.P.; Irvine, A.R.
February,1972
TIC $9.00

ORNL-TM-4437
Reactor Cross-Section Sensitivity Studies Using Transport Theory.
Oblow, E.M.
April,1974
NTIS $4.00

ORNL-TM-4441
Results of ORNL Measurements Made During the International Neutron Dosimetry Intercomparison, March 19-30,1973.
Dickson, H.W.; Christian, D.J.
February,1974
Dep., NTIS $3.25

ORNL-TM-4442
Calculations Pertaining to the Use of Fast ($\lesssim$ 50 MeV) Neutrons in Cancer Radiotherapy.
Alsmiller, R.G.,Jr.; Barish, J.
February,1974

ORNL-TM-4523
Gamma-Ray Production due to Neutron Interactions with Zinc. Tabulated Differential Cross Sections for 31 Gamma Rays for Incident Neutron Energies Between 0.9 and 6 MeV.
Slaughter, G.G.; Dickens, J.K.
April,1974

ORNL-TR-2745
Civil Defense of the USSR: Antiradiation Shelters in Rural Areas, Instructions for the Population.
Molodykh, V.I.; Nikaronov, A.A.; Korotkevich, E.I.; Koshelev, P.A.
1972
Dep., NTIS $4.50

RT/FI(73)28
The Role of Integral Data.
Farinelli, U.
August, 1973
Dep., NTIS (U.S. Sales Only)

SSI-1973-23
Establishment of Standards and Working Limits for Radioactive Contaminants.
Lindell, B.
November, 1973
Dep., NTIS (U.S. Sales Only) $3.00

SSI-1972-26 (In Swedish)
Secondary Radiation from a Spheric Tissue Equivalent Phantom Irradiated with 60-Co Gamma-Radiation and 6 MV X-Radiation.
Nilsson, B.
August, 1972
Dep., NTIS (U.S. Sales Only) $5.75

STI/PUB-345; CONF-730503
Environmental Behavior of Radionuclides Released in the Nuclear Industry. Proceeding Series. Proceedings of a Symposium Held in Aix-en-Provence, France, May 14-18, 1973.
IAEA
December, 1973
IAEA $34.00

TIM-862
SNAP-50 Shield Parametric Study.
Granter, W.; Spring, R.
February 24, 1965
Declassified August 30, 1973
Dep., NTIS $9.00

TIM-866
PWAR-20 Shield Preliminary Analysis.
Pratt and Whitney Aircraft, Middletown, Conn.
December 1, 1964
Declassified August 31, 1973
Dep., NTIS $5.50

UCID-16397
Comparison of Experimental Data from Energy-Dependent Resonance Self-Shielding Factors for 235-U and 239-Pu with Calculations from TART.
Bacon, L.J.
November 29, 1973
Dep., NTIS $3.50

UCRL-13591
Present and Future Capabilities for Battlefield Radiation Hazard Assessment. Final Report.
Lee, H.; Millican, R.W.; Hardman, W.F.
November, 1973
Dep., NTIS $8.50

UJV-3096-R
Solution of Energy-Dependent Boltzmann Equation in a System of Slabs.
Kyncl, J.
September, 1973
Dep., NTIS (U.S. Sales Only) $3.25

WAPD-TM-1072
The 252-Cf Fission Neutron Spectrum from 0.5 to 13 MeV.
Green, L.; Mitchell, J.A.; Steen, N.M.
December, 1973
NTIS

WAPD-TM-1129
233-U Fission Neutron Spectrum from 0.8 to 10 MeV (LWBR Development Program).
Green, L.; Mitchell, J.A.; Steen, N.M.
December, 1973
Dep., NTIS $3.00

ZJE-99; CONF-700630-2
Influence of Some Metallurgical Variables on the Radiation Damage Sensitivity of Pressure Vessel Steels.
Brumovsky, M.
1971
Dep., NTIS (U.S. Sales Only)

ZJE-101
Difference Method of Solution of Two-Dimensional Multigroup Time-Independent Diffusion Equations.
Krysl, V.
1971
Dep., NTIS (U.S. Sales Only)

Acta Radiol., Ther., Phys., Biol., 11(6), 603-624
Procedures in Radiation Therapy Dosimetry with 5 to 50 MeV Electrons and Roentgen and Gamma Rays with Maximum Photon Energies Between 1 and 50 MeV. Recommendations by the Nordic Association of Clinical Physics.
1972

Advan. Nucl. Sci. Technol., 5, 325-368
Round-Off Free Solution of the Boltzmann Transport Equation in Slab Geometry.
Lois, L.; Certaine, J.
1969

Biophysik, 10(3), 229-234
Aspects in Practical Neutron Dosimetry with Ionization Chambers.
Kuehn, H.
1973

Geol. Pruzkum, 15(3), 68-72 (In Czech)
Serpentinites and Protection Against Nuclear Radiation.
Krejcir, M.
March, 1973

Health Phys., 26(2), 179-189
Photon Sources for Instrument Calibration.
Storm, E.; Lier, D.W.; Israel, H.I.
February,1974

Health Phys., 26(3), 217-221
Calculation of the HPRR Neutron Spectrum for Simulated Nuclear Accident Conditions.
Poston, J.W.; Knight, J.R.; Whitesides, G.E.
March,1974

Health Phys., 26(3), 223-227
A New Interpretation of the Data of Hurst Threshold Detector System for Intermediate Neutrons.
Koshaeva, K.K.; Kraitor, S.N.
March,1974

Health Phys., 26(3), 229-243
Comments on the Theory of Radiation Risk, Parts 1 and 2.
Neufeld, J.
March,1974

J. Atmospheric and Terrestial Phys., 36(4), 591-617
Some New Results on Electron-Transport in Atmosphere.
Berger, M.J.; Seltzer, S.M.; Maeda, K.
1974

J. Nucl. Energy, 27(6), 415-423
First Flight Escape Probability for a Spherical Shell with an Empty Central Region.
Lefvert, T.
June,1973

J. Nucl. Energy, 27(11), 787-796
Energy Spectra and Thickness Dependence of Fast Neutrons Transmitted Through Plane Scatterers.
German, U.; Segal, Y.; Notea, A.
November,1973

J. Nucl. Energy, 27(11), 828
Photoneutron Production Cross-Section of Beryllium and Deuterium at a Number of Gamma Energies Below 3 MeV.
Vesely, F.; Bensch, F.
November,1973

Nucl. Sci. Eng., 53(4), 355-369
Solution of Standard Diamond Difference Equations for Discrete-Ordinate Neutron Transport Equations Equivalent to the PL Approximation in X-Y Geometry.
Jung, J.; Ohtani, N.; Kobayashi, K.; Nishihara, H.
April,1974

Nucl. Sci. Eng., 53(4) 415-419
A Study of the 2.8-keV Neutron Resonance of Sodium and an Analysis of the Total Neutron Cross Section up to 50 keV.
Seltzer, J.; Firk, F.W.K.
April,1974

Nucl. Sci. Eng., 53(4), 420-435
Fine Neutron-Spectrum Effects on Spatial Calculations for Fast-Reactor Design.
Corcuera, R.; Khairallah, A.
April, 1974

Nucl. Sci. Eng., 53(4), 436-439
A Method of Computing Fission-Product Decay Heat in a Reactor with Time-Dependent Flux.
Barclay, F.W.; Dormuth, K.W.
April, 1974

Nucl. Sci. Eng., 53(4), 475-478
Reciprocity Relations in Response Matrix Theory.
Lindahl, S.-O.
April, 1974

Nucl. Sci. Eng., 53(4), 487-488
An Assessment of Proposed (n, gamma n') Data Based on Measured and Calculated Neutron Spectra in Uranium Depleted in Uranium-235.
Becker, M.; Kaushal, N.N.
April, 1974

Nucl. Technology, 16(1), 216-225
Performance Modeling of Neutron Absorbers.
Homan, T.
October, 1972

Nucl. Technology, 16(1), 308-315
Effect of Irradiation on the Strain Rate Dependence of Type 304 Stainless-Steel Mechanical Properties.
Steichen, J.
October, 1972

Nucl. Technology, 22(1), 10-19
Materials Problems in the Design of Magnetically Confined Plasma Fusion Reactors.
Fraas, A.P.
April, 1974

Nucl. Technology, 22(1), 20-35
Radiation Damage Limitations in the Design of the Wisconsin Tokamak Fusion Reactor.
Kulcinski, G.L.; Brown, G.; Lott, R.G.; Sanger, P.A.
April, 1974

Nucl. Technology, 22(1), 36-44
The Relevance of Various Neutron Sources to Fusion-Reactor Radiation Effects.
Logan, C.M.; Anderson, J.D.
April, 1974

Nucl. Technology, 22(1), 45-51
Impurity Redistribution Around Voids in Ion-Bombarded Vanadium.
Okamoto, P.R.; Santhanam, A.T.; Wiedersich, H.; Taylor, A.
April, 1974

Nucl. Technology, 22(1), 52-65
Stability of the Defect State in Neutron-Irradiated Molybdenum.
Sikka, V.K.; Moteff, J.
April, 1974

Nucl. Technology, 22(1), 66-78
TEM Investigation of 14-MeV Neutron Damage.
Merkle, K.L.
April, 1974

Nucl. Technology, 22(1), 79-87
Effect of Helium on the Fatigue Behavior of the Molybdenum-Base Alloy TZM at 900 Degrees C.
Nichel, D.J.; Serpan, C.Z.,Jr.; Smith, H.H.; Pieper, A.G.
April, 1974

Nucl. Technology, 22(1), 88-93
Thermal and Electrical Conductivities and Seebeck Coefficients of Unirradiated and Irradiated Graphites from 300 to 1000 Degrees K.
Moore, J.P.; Graves, R.S.; McElroy, D.L.
April, 1974

Nucl. Technology, 22(1), 94-107
Thermal Conductivity of Oriented Fibrous Carbon Insulation from 300 to 1300 Degrees K in Nitrogen and Argon at One Atmosphere.
Godfrey, T.G.; McElroy, D.L.; Ardary, Z.L.
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CONTRIBUTED PAPERS SOUGHT BY ANS SHIELDING AND DOSIMETRY DIVISION

Special sessions sponsored by the Shielding and Dosimetry Division are planned for the Washington American Nuclear Society meeting scheduled for November 1974. These are:

1. "CTR Blanket, Shielding, and Cross Section Studies," being organized by Don Dudziak, LASL. (CTR= Controlled Thermonuclear Reactor)

2. "Process and Area Radiation Monitoring," being organized by Ed Warman, Stone & Webster, Boston.

Contraty to the information in the call for papers in the April Nuclear News, both invited and contributed papers are being solicited. It is the policy of the S&D Division to include contributed papers in all Division-sponsored sessions.

PHILADELPHIA ANNUAL ANS MEETING, JUNE 23-27, 1974

The Technical Program of the S&D Division is as follows:

Mon.	June 24	AM	In-Plant Radiation Exposure Experience - I Cross Sections for Radiation Transport
		PM	In-Plant Radiation Exposure Experience - II (panel)
Tues.	June 25	AM	Radiation Transport - Experimental
		PM	Shielding and Radiation Transport Applications (could be subtitled, "Radiation Transport in Concrete") Business meeting scheduled after this session.
Wed.	June 26	AM	Dosimetry for Internal Emitters - I
		PM	Radiation Transport - Analytical