



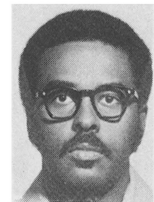
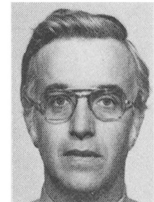
AUTHORS — MAY 1980

REACTORS

DOSE RATES FROM INDUCED ACTIVITY IN THE TOKAMAK FUSION TEST REACTOR TEST CELL

R. G. Alsmiller, Jr. (top right) (PhD, University of Kansas, 1957) is leader of the Applied Physics and Fusion-Reactor Analysis Group of the Engineering Physics Division at the Oak Ridge National Laboratory (ORNL). For several years, he has directed the theoretical research in this division in the areas of high-energy nuclear reactions, high-energy nuclear transport, and fusion reactor neutronics. **J. Barish** (top left) (BS, Memphis State University, 1962) is a member of the Computer Sciences Division at ORNL. Since 1963, he has worked with the Applied Physics and Fusion-Reactor Analysis Group of the Engineering Physics Division. His major interest is in the development of numerical techniques to carry out high-energy nucleon transport calculations. **R. T. Santoro** (center right) (MS, University of Tennessee, 1967) is a member of the Engineering Physics Division at ORNL. His current interests are in neutron transport and neutron interactions with matter related to fusion reactor design. He is currently involved in the neutronic investigations of reactor blanket and shield design, neutral beam injectors, radiation streaming from penetrations, radiation effects in materials, and the analysis of integral experiments for fusion reactor shields. **R. A. Lillie** (center left) (PhD, University of Tennessee, 1975) is a research staff member in the Engineering Physics Division at ORNL. His work has been in the areas of fission reactor core physics and shielding analysis. His current interests focus on the application of radiation transport methods to fusion reactor neutronics problems. **J. M. Barnes** (bottom right) (BS, University of Arkansas, 1965) is a member of the Computer Sciences Division at ORNL. He is involved in the neutronic analysis of fusion reactor blankets and shields, neutral beam injectors, radiation effects in materials, and the analysis of integral experiments for fusion reactor shields. **M. M. H. Ragheb** (bottom left) (BSc, MSc, nuclear engineering, University of Alexandria; MS, PhD, nuclear engineering, University of Wisconsin, Madison, 1978) is an assistant professor of nuclear engineering at the University of Illinois at Urbana-Champaign. His theoretical interests are in the areas of reactor theory, statistical simulation, and variational and weighted residual methods. His current technical interests are in the neutronics and photonics of fusion and fusion-fission energy systems.

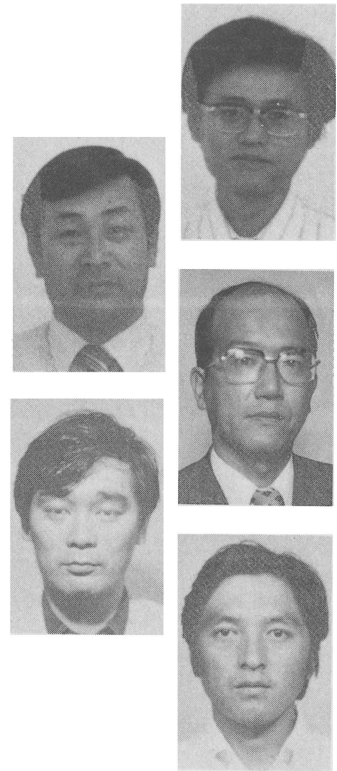
*R. G. Alsmiller, Jr.
J. Barish
R. T. Santoro
R. A. Lillie
J. M. Barnes
M. M. H. Ragheb*



IMPURITY DEPOSITION IN A MESH-PACKED COLD TRAP

Michio Murase (top right) (MS, mechanical engineering, Kyoto University, 1973) is a researcher at Energy Research Laboratory, Hitachi Ltd. (ERL/Hitachi). His current interests are heat and mass transfer and safety engineering in a boiling water reactor (BWR). **Isao Sumida** (top left) (BS, physics, Tokyo University, 1963) is a senior researcher at ERL/Hitachi. His current interests are two-phase flow phenomena in a BWR and technical problems of a solar power generating system and a wind turbine. **Norio Nagase** (center right) (BS, physics, Rikkio University, 1964) was a leader in Fast Breeder Reactor Development Project at Power Reactor and Nuclear Fuel Development Corporation (PNC) from 1975 to 1979. He is now in Toyo Soda Ltd. **Kazuo Mukai** (bottom left) (MS, nuclear engineering, Osaka University, 1973) worked in Oarai Engineering Center at PNC from 1973 to 1976 and was engaged in experimental study of sodium technology. He now works in the PNC Fast Breeder Reactor Development Project. **Osamu Onuki** (bottom right) is a technician who has worked since 1972 in Oarai Engineering Center at PNC. He was engaged in the forced-life test of the cold trap.

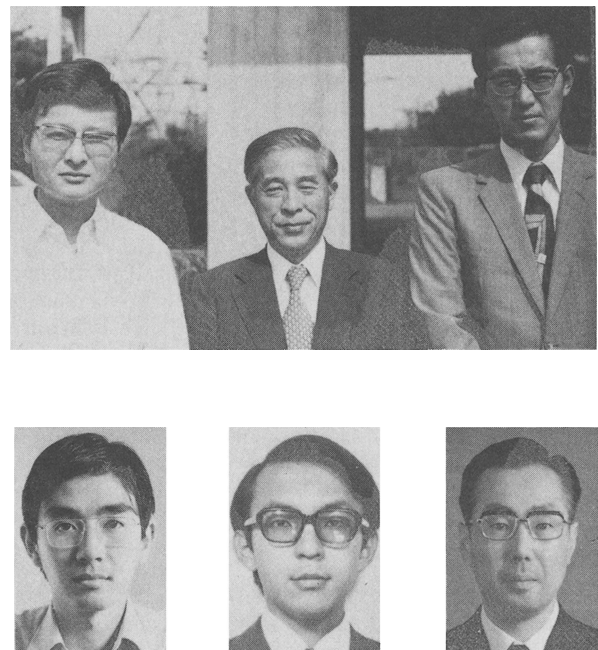
*Michio Murase
Isao Sumida
Norio Nagase
Kazuo Mukai
Osamu Onuki*



DEVELOPMENT STUDIES REGARDING THE CONSTRUCTION OF EPITHERMAL-ENRICHED NEUTRON FIELD FOR MEDICAL PURPOSES AT THE UNIVERSITY OF TOKYO YAYOI FAST REACTOR

Shigehiro An (top photo, center) (Dr. Eng., University of Tokyo, 1963) is a professor at the Nuclear Engineering Research Laboratory of the University of Tokyo (UTNL). His research interests include core design of fast breeder reactors and medical purpose reactors. **Akira Furuhashi** (bottom, left) (Dr. Eng., University of Tokyo, 1969) was an associate professor at UTNL from 1969 to 1977 and now is a senior staff scientist in the Fast Breeder Reactor Development Project at the Power Reactor and Nuclear Fuel Development Corporation. His main interests are in reactor neutron physics and fuel cycle analysis. **Yoshiaki Oka** (top photo, right) (Dr. Eng., University of Tokyo, 1974) is an associate professor at UTNL. His current research interests include core design of medical purpose reactors and radiation shielding. **Masatsugu Akiyama** (top photo, left) (MS, physics, Tohoku University, 1970) is a research associate at UTNL. His interest is in decay heat of fast fission products. **Hiroyuki Kuga** (bottom, center) (MS, nuclear engineering, University of Tokyo, 1979) is a member of the Plant Management Department at Japan Atomic Power Co. His interest is in the analysis of nuclear power plants. **Harukuni Tanaka** (bottom, right) (BS, nuclear engineering, University of Tokyo, 1976) is now engaged in reactor core management at Fukushima Dai-ichi Nuclear Power Station of Tokyo Electric Power Co. His interest is in fuel design optimization.

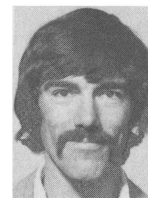
*Shigehiro An
Akira Furuhashi
Yoshiaki Oka
Masatsugu Akiyama
Hiroyuki Kuga
Harukuni Tanaka*



NUCLEAR PERFORMANCE OF MOLTEN SALT FUSION-FISSION SYMBIOTIC SYSTEMS FOR CATALYZED DEUTERIUM-DEUTERIUM AND DEUTERIUM-TRITIUM REACTORS

*M. M. H. Ragheb
R. T. Santoro
J. M. Barnes
M. J. Saltmarsh*

M. M. H. Ragheb (top right) (BSc, MSc, nuclear engineering, University of Alexandria, MS, PhD, nuclear engineering, University of Wisconsin, Madison, 1978) is an assistant professor of nuclear engineering at the University of Illinois at Urbana-Champaign. His theoretical interests are in the areas of reactor theory, statistical simulation, and variational and weighted residual methods. His current technical interests are in the neutronics and photonics of fusion and fusion-fission energy systems. **R. T. Santoro** (top left) (MS, University of Tennessee, 1967) is a member of the Engineering Physics Division at Oak Ridge National Laboratory (ORNL). His current interests are in neutron transport and neutron interactions with matter related to fusion reactor design. He is currently involved in the neutronic investigations of reactor blanket and shield design, neutral beam injectors, radiation streaming from penetrations, radiation effects in materials, and the analysis of integral experiments for fusion reactor shields. **J. M. Barnes** (bottom right) (BS, University of Arkansas, 1965) is a member of the Computer Sciences Division at ORNL. He is involved in the neutronic analysis of fusion reactor blankets and shields, neutral beam injectors, radiation effects in materials, and the analysis of integral experiments for fusion reactor shields. **M. J. Saltmarsh** (bottom left) (D. Phil, University of Oxford, 1966) is a member of the Fusion Energy Division at ORNL. He is presently in charge of the operation of the ISX-B Tokamak in the Fusion Energy Division.

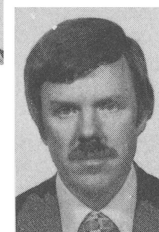
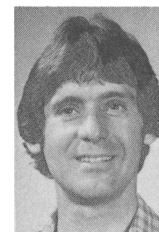


REACTOR SITING

ON THE VOLATILIZATION POTENTIAL OF METALLIC INCLUSIONS FOUND IN IRRADIATED UO₂ FUEL DURING OVERHEATING EVENTS

*Paul Sasa
August W. Cronenberg
Michael G. Stevenson*

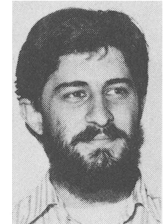
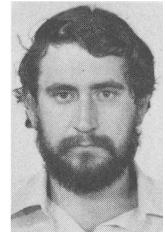
Paul Sasa (top) (BS, engineering physics, University of Colorado, 1969; PhD, nuclear engineering, University of New Mexico, 1978) is a senior research engineer for Rockwell International. **August W. Cronenberg** (center) (BS, mechanical engineering, Newark College of Engineering, 1966; PhD, engineering science, Northwestern University, 1971) is currently an independent consultant involved in heat transfer, fuel behavior, and materials phenomena for reactor safety assessment. **Michael G. Stevenson** (bottom) (BS, engineering science, University of Texas at Austin, 1964; PhD, mechanical engineering, University of Texas at Austin, 1968) is the assistant division leader for reactor safety in the Energy Division at Los Alamos Scientific Laboratory. He currently manages advanced reactor safety research work in this division and has a long-standing involvement and interest in analysis of fast reactor accident phenomenology.



SUPERCriticalITY THROUGH OPTIMUM MODERATION IN NUCLEAR FUEL STORAGE

J. Manuel Cano (top) [MS, nuclear engineering, Politechnical University of Madrid (Spain), 1975] is a staff member of Junta de Energia Nuclear (JEN). His experience includes thermal reactor physics. He is currently involved in a number of research reactor projects. **R. Caro** (center) (PhD, nuclear engineering, University of Madrid-Complutense, 1956) is a group leader in JEN. He has worked with thermal reactor physics; pressurized water reactors; the Zorita project for Westinghouse Electric Co., Pittsburgh, 1967; the High Temperature Gas Reactor Dragon project for United Kingdom Atomic Energy Authority, Winfrith, 1961; and the experimental fast reactor zero power facility CORAL of JEN. **José M. Martínez-Val** (bottom) (PhD, nuclear engineering, Politechnical University of Madrid, 1977) was a member of JEN from 1973 to 1979, and has become assistant professor of nuclear technology at Politechnical University of Madrid. He worked in nuclear fuel management, nuclear data processing, and fast reactor neutronic analysis. His current interests are in neutron calculation methodologies and their applications.

*J. M. Cano
R. Caro
J. M. Martínez-Val*



INTERNATIONAL SYMBIOSIS: THE ROLE OF THORIUM AND THE BREEDERS

Daisy M. Ligon (top) (BS, chemistry, University of the Philippines, 1968) is a senior engineer at General Atomic Company. Her current interests are in national and international nuclear energy assessments, nuclear fuel cycle, and economics. **Rudolf H. Brogli** (MS, experimental physics, Swiss Federal Institute of Technology, 1961; PhD, theoretical physics and nuclear engineering, University of Berne, 1964) is manager of fuel systems analysis at General Atomic Company. He is responsible for international and national energy systems analysis from economic and resource standpoints. His special interests include fuel management, reactor physics, core design, and core performance analysis of gas-cooled reactors.

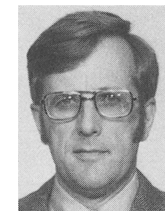
*D. M. Ligon
R. H. Brogli*



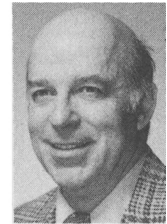
DEVELOPMENT AND PERFORMANCE OF METAL FUEL ELEMENTS FOR FAST BREEDER REACTORS

Leon C. Walters (right) (BS, 1961, MS, 1963, and PhD, 1966, metallurgical engineering, Purdue University) was named associate director of the Fuels and Materials Department of the Argonne National Laboratory (ANL) Experimental Breeder Reactor-II (EBR-II) Project in Idaho in May 1978. His responsibilities include the manufacture and performance of the fuels and materials in EBR-II, and nondestructive testing programs on ex-core components. In addition, he is manager of

*L. C. Walters
J. H. Kittel*



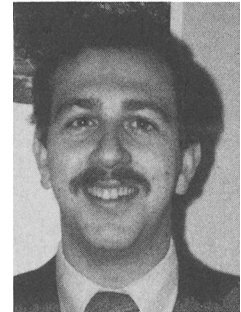
ANL's interdivisional National Cladding/Duct Materials Development Program. **J. Howard Kittel** (BS, metallurgical engineering, Washington State University, 1943) is a senior metallurgist at ANL. He is currently manager of ANL's Office of Nuclear Waste Management Programs. In the period from 1948 to 1979, he was associated with research and development of reactor materials, and was primarily involved in studies on irradiation effects in reactor fuels.



THE EFFECT OF LOW PRESSURIZED WATER REACTOR CONTAINMENT PRESSURE ON PEAK CLADDING TEMPERATURES

Vincent P. Manno

Vincent P. Manno [BS, nuclear engineering, Columbia University, 1976; MS, nuclear engineering, 1978, and Nuclear Engineer's Degree, 1979, Massachusetts Institute of Technology (MIT)] is a DSc candidate at MIT in the area of thermal hydraulics. He is presently employed by American Electric Power Service Corporation, where he is in charge of all computer code related safety analysis.

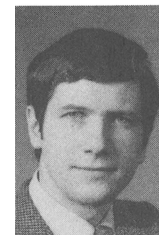
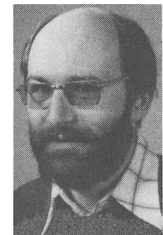


RADIOACTIVE WASTE

APPLICATION OF SIMPLIFIED RELIABILITY METHODS FOR RISK ASSESSMENT OF NUCLEAR WASTE REPOSITORIES

*Andreas Pritzker
Jürg Gassmann*

Andreas Pritzker (top) (Dipl., physics, 1970, and Dr. sc. nat., reactor physics, 1974, Swiss Federal Institute of Technology, Zurich) is performing reliability and risk analyses for nuclear power plants and nuclear waste repositories with Motor-Columbus Consulting Engineers, Nuclear Engineering Department. **Jürg Gassmann** (Dipl., Ing., 1972, and Dr. sc. techn., reactor technology, 1976, Swiss Federal Institute of Technology, Zurich) is head of the Waste Management and Radioecology Section at Motor-Columbus Consulting Engineers. He is currently involved in project studies for underground nuclear waste repositories.

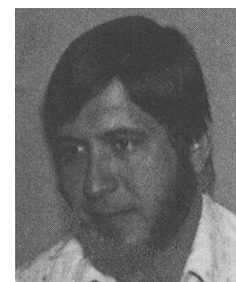


MATERIALS

CORROSION OF 15 Cr-35 Ni-50 Fe DOPED WITH NIOBIUM, TITANIUM, OR MOLYBDENUM IN HIGH TEMPERATURE REACTOR HELIUM

Otto Demel

Otto Demel (PhD, physics, University of Vienna, Austria, 1972) has been a scientific coworker in the Department for Metallurgy at Forschungszentrum Seibersdorf in Austria since 1972. He is engaged in work on high temperature corrosion of alloys, carburization of steels, and diffusion in metallic materials. During 1977 and 1978, he seconded as a guest scientist to the High Temperature Materials Programme in Wimborne, United Kingdom, where he investigated corrosion of alloys in simulated high temperature reactor helium.



EMPIRICAL DEVELOPMENT OF IRRADIATION-INDUCED SWELLING DESIGN EQUATIONS

J. F. Bates
M. K. Korenko

J. F. Bates (top) (BS, Colorado School of Mines, 1969; MS, Washington State University, 1978) has worked in the area of materials science and engineering for the past ten years at the Hanford Engineering Development Laboratory. He is a registered professional engineer in nuclear engineering and a patentee in the field of alloy development. He is currently involved in the area of compositional effects on the irradiation-induced swelling of reactor core components. **M. K. Korenko** (BS, 1966, MS, 1968, Case-Western Reserve University; ScD, Massachusetts Institute of Technology, 1973) served as a NATO Postdoctoral Fellow at Oxford University and has had six years experience in materials design for nuclear applications. He has had several patents and publications and was awarded the 1977 Westinghouse Hanford Invention of the Year Award. His experience includes chairmanship of three National Research Task Groups and management of the Alloy Properties Section. He is currently on a one-year assignment at the U.S. Department of Energy.

