



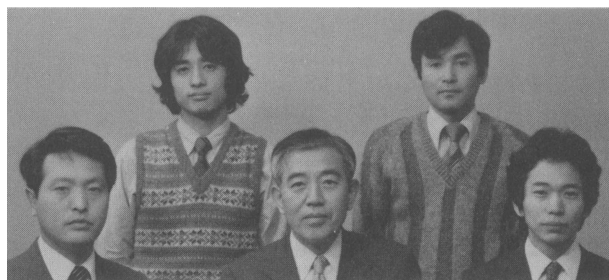
AUTHORS — AUGUST 1983

CHEMICAL PROCESSING

THE EFFECT OF SALT COMPOSITION ON REDUCTIVE EXTRACTION OF SOME TYPICAL ELEMENTS FROM MOLTEN LiF-BeF₂ SALT INTO LIQUID BISMUTH

Hirotake Moriyama (bottom row, left) (BS, 1973, MS, 1975, and D. Eng., 1981, radiochemistry, Kyoto University) is an instructor in the Department of Nuclear Engineering, Kyoto University. His current interest lies in reactor chemistry. **Kunimitsu Yajima** (top row, left) (BS, 1979, and MS, 1981, nuclear engineering, Kyoto University) is a graduate student in the doctorate program in the Department of Nuclear Engineering, Kyoto University. His current interest lies in surface properties of ionic melt. **Yasunobu Tominaga** (bottom row, right) (BS, nuclear engineering, Kyoto University, 1981) is a graduate student in the master's degree program in the Department of Nuclear Engineering, Kyoto University. He is interested in spent fuel reprocessing. **Kimikazu Moritani** (top row, right) (BS, nuclear engineering, Kinki University, 1969) has worked as an educational assistant in the Department of Nuclear Engineering, Kyoto University, since 1969. His current interest lies in radiation chemistry. **Jun Oishi** (bottom row, center) (BS, chemical engineering, Kyoto Imperial University, 1945; D. Eng., chemical engineering, Kyoto University, 1955) is a professor of nuclear chemical engineering in the Department of Nuclear Engineering, Kyoto University, and is currently interested in stable isotope separation, thermochemistry of lanthanides and actinides, and chemical aspects of molten salt reactors.

*Hirotake Moriyama
Kunimitsu Yajima
Yasunobu Tominaga
Kimikazu Moritani
Jun Oishi*

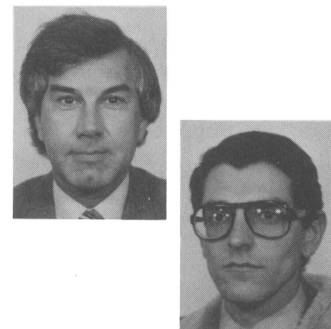


NUCLEAR FUELS

THE CURRENT STATUS AND PERSPECTIVES OF FISSILE MATERIAL AVAILABILITY IN THE WORLD THROUGH THE YEAR 2000

John Jeffrey Stobbs (top) (BSc, metallurgy, Durham University, 1959; D.I.C., nuclear technology, London University, 1961) is a vice-president of Nuclear Assurance Corporation. Since 1972, he has been responsible for the management of the company's European office based in Zurich. Main activities are related to consulting and analysis services for the entire nuclear fuel cycle. **Antonio Matteo Taormina** (BS, mathematics, Eidgenössische Technische Hochschule, Zurich, 1972) is a senior fuel cycle specialist in the Zurich office of Nuclear Assurance Corporation. Since 1978 his interests have been concerned with all technical and commercial aspects of the nuclear fuel cycle.

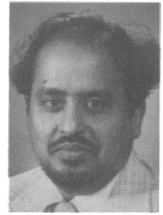
*John Jeffrey Stobbs
Antonio Matteo Taormina*



AQUEOUS CORROSION OF URANIUM ALUMINIDE FUEL

Krishna Vinjamuri (top) [BSc (Honors), mathematical physics, 1959; MSc, nuclear physics, Andhra University, 1963; MS, nuclear engineering, University of Wisconsin, 1968; PhD, nuclear engineering, Iowa State University, 1971] is associated with EG&G Idaho, Inc. His primary areas of interest are thermal fuels behavior during normal, off-normal, and postulated accident conditions; in-reactor creep and densification; fission gas fuel swelling; fission product behavior during accident conditions; and pre- and posttest characterization of light water reactor (LWR) fuel elements. **Richard R. Hobbins** (AB, chemistry, Princeton University, 1960; PhD, metallurgy, University of Delaware, 1969) is manager of the LWR Fuel and Fission Product Research Branch, EG&G Idaho, Inc. He has worked at the Idaho National Engineering Laboratory since 1969 in the areas of uranium aluminide test reactor fuel behavior and LWR fuel behavior under accident conditions. His current technical interest is the fission product source term under severe LWR accident conditions and its relation to core behavior.

*Krishna Vinjamuri
Richard R. Hobbins*

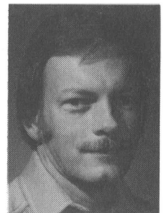
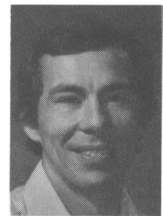
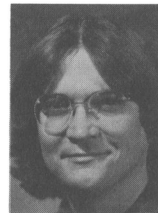


RADIOACTIVE WASTE MANAGEMENT

THE EFFECTS OF SURFACE AREA TO SOLUTION VOLUME ON WASTE GLASS LEACHING

L. R. Pederson (top) [BS, chemistry, Bemidji (Minnesota) State University, 1972; PhD, chemistry, University of Wisconsin-Milwaukee, 1978] is a senior scientist in the Materials Department at Pacific Northwest Laboratory (PNL) where he is involved in basic and applied glass leaching studies with an emphasis on surface spectroscopies. **C. Q. Buckwalter** (center) (BS, business management, Pennsylvania State University, 1971; BS, 1976, and MS, 1978, chemistry, Arizona State University), formerly a research scientist in the Materials Department at PNL, is presently studying law at Lewis and Clark College in Portland, Oregon. **G. L. McVay** (bottom) (BS, metallurgical engineering, 1965; MS, ceramic engineering, 1967; PhD, ceramic engineering, 1970, University of Missouri-Rolla) is a staff scientist and technical leader of the Glass Technology Group in the Materials Department at PNL. His interests and activities are in developing an understanding of glass and ceramic interactions with aqueous solutions.

*L. R. Pederson
C. Q. Buckwalter
G. L. McVay*

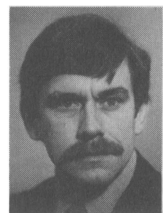
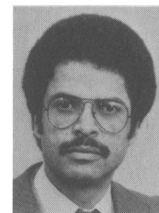


HEAT TRANSFER AND FLUID FLOW

TRANSIENT ANALYSIS OF THE THREE MILE ISLAND UNIT 2 PRESSURIZER SYSTEM

Benaissa Baggoura (top) (BS, mechanical engineering, University of Algiers, 1974; MSE, 1977, and PhD, 1982, nuclear engineering, University of Michigan) has been a research fellow in nuclear reactor safety at Brookhaven National Laboratory. His area of expertise is numerical modeling of transient two-phase flow in nuclear reactor systems. He has recently returned to Algeria. **William R. Martin** (BSE, engineering physics, University of Michigan, 1967; MS, physics, University of Wisconsin,

*Benaissa Baggoura
William R. Martin*

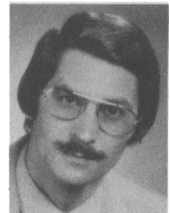
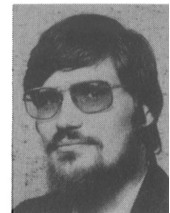


1968; MSE, 1975, and PhD, 1976, nuclear engineering, University of Michigan) is an associate professor of nuclear engineering at the University of Michigan. He previously spent four years in the Naval Reactors Program in Washington, D.C. and one year in reactor methods development at Combustion Engineering, Inc. His current interests are the development of numerical methods for global reactor core analysis, nuclear plant simulation, and particle transport, including the utilization of supercomputers for Monte Carlo analysis. He co-authored (with James J. Duderstadt) the textbook *Transport Theory* in 1979.

SAFETY ANALYSIS OF THE REACTIVITY TRANSIENTS RESULTING FROM WATER INGRESS INTO A HIGH-TEMPERATURE PEBBLE BED REACTOR

Rahim Nabbi (top left) [Dipl.-Phys., 1976; Dr. rer. nat., nuclear reactor physics, 1976, Technical University of Aachen, Federal Republic of Germany (FRG)] has been involved in nuclear accident investigation for high-temperature gas-cooled reactors (HTGR) at the Institute for Nuclear Safety Research (ISF) at the Kernforschungsanlage Jülich. His work relates to the analysis of neutronics and dynamics of HTGR cores under transient conditions. His primary research interests include the investigation of reactivity and power transients using space-time kinetic methods with feedback effects. **Wilfried Jahn** (top right) (Dipl.-Ing., mechanical engineering, 1974; Dipl.-Ing., nuclear engineering, 1975, Fachhochschule Kiel) has worked since 1975 as a nuclear engineer in the Department of Reactor Physics and Thermodynamics of the ISF. He engaged in research relevant to analysis of primary circuit dynamics of HTGRs. His special research interest is the transient behavior of the HTGR steam generator. **Gerhard Meister** (bottom left) (Dr. rer. nat., physics, University of Bonn, FRG, 1955) is a group leader at the ISF at Kernforschungsanlage Jülich, mainly working in the development of computer codes simulating the dynamics of HTGR power plants. **Werner Rehm** (bottom right) (Dipl.-Phys., 1970; Dr. rer. nat., 1979, Technical University of Aachen, FRG) is a reactor physicist at the ISF at the Kernforschungsanlage Jülich. He is responsible for the thermodynamic analysis of the heat removal system of HTGR concepts under accident conditions. His research interests include the study of the consequences of core heatup sequences and of water ingress accidents.

*Rahim Nabbi
Wilfried Jahn
Gerhard Meister
Werner Rehm*



ECONOMICS

ANALYSIS OF DECOMMISSIONING COSTS FOR NUCLEAR POWER REACTORS

David F. Greenwood (right) (BS, engineering management, Northeastern University, 1961; BS, civil engineering, University of Massachusetts, 1964; MS, civil engineering, Tufts University, 1966) joined Stone & Webster Engineering Corporation (SWEC) in 1969. As a senior engineer in the Department of Nuclear Technology, he is responsible for developing corporate capabilities in decommissioning and decontamination (D&D) and related services, application of corporate capabilities to D&D

*David F. Greenwood
Richard K. Westfahl
James W. Rymsha*



projects, and providing technical expertise to D&D projects. His principal interests are in the areas of nuclear D&D and nuclear waste disposal. **Richard K. Westfahl** (top) (BS, engineering, U.S. Naval Academy, 1959; MS, oceanography, U.S. Naval Post Graduate School, 1970) is project manager in the Project Management Department of the SWEC responsible for standards and procedures for radiological protection and safety, radiation monitoring systems, nuclear fuels management, and emergency planning. He has been associated with SWEC since 1979 in numerous managerial positions including assistant chief of the Nuclear Technology Division and is currently manager of the SWEC office in Richland, Washington. His major interest is in nuclear engineering, including radiological safety and management systems, nuclear fuels and data systems, emergency planning, and radiological assessments. **James W. Rymsha** (bottom) (BS, engineering management, Norwich University, 1966; AAS, data processing, Coleman College, 1969), employed since 1971 by SWEC, prepares capital cost estimates. As senior estimating engineer, he has served as the project cost engineer on major fossil, nuclear, and conversion projects. In addition to his specialization as estimator, he provides technical guidance in the mechanical area. His major area of interest is cost estimating for new energy technologies.



ANALYSES

ANALYSIS OF DETAILED NEUTRON FLUXES IN A PWR PRESSURE VESSEL BY TWO- AND THREE-DIMENSIONAL PALLAS TRANSPORT CODES

*Kiyoshi Takeuchi
Nobuo Sasamoto*

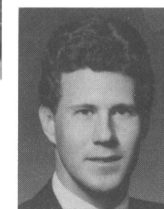
Kiyoshi Takeuchi (top) (BS, physics, Tokyo University of Education, 1958; PhD, nuclear engineering, Kyoto University, 1972) is chief of the Shielding Effect Section of the Tokai Branch of the Ship Research Institute. His special interests include calculations of radiation transport in shield, radiation heating, and radiation damage on reactor structural materials. **Nobuo Sasamoto** (BS, electrical engineering, Kyoto University, 1967) is currently involved in development of radiation transport codes in three-dimensional geometries.



A FINITE DIFFERENCE TREATMENT OF DIFFERENTIAL EQUATION SYSTEMS WITH WIDELY DIFFERING TIME CONSTANTS

*G. Ronald Dalton
Michael T. Gamble*

G. Ronald Dalton (top) (BS, mechanical engineering, 1954, and PhD, nuclear engineering, University of Michigan) is a professor of nuclear engineering at the University of Florida in Gainesville. He has been a visiting scientist at Argonne National Laboratory, at Oak Ridge National Laboratory, and at the Karlsruhe Nuclear Center. His interests include reactor analysis, numerical methods, computers, and computer graphics. **Michael T. Gamble** (BS, 1980, and MS, 1981, nuclear engineering, University of Florida, Gainesville) is director of nuclear applications with Advanced Technical Services in Clearwater and is responsible for licensing, radiological, and radwaste services.



SYSTEM PREPARATION AND FAST NEUTRON SPECTRA MEASUREMENT IN A GRAPHITE STACK

*Alex Tsechanski
Gad Shani*

Alex Tsechanski (top) (MSc, electrical engineering, 1967; PhD, nuclear engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel, 1981) is employed by the Nuclear Engineering Department of the Ben-Gurion University of the Negev, Beer-Sheva, Israel. His current interests include fast neutron spectra measurements and integral experiments for fusion reactor blanket design. **Gad Shani** (BSc, electrical engineering, 1964, and MSc, nuclear science, 1966, Technion, Israel; PhD, nuclear engineering, Cornell University, 1970) is currently associate professor of nuclear engineering at Ben-Gurion University of the Negev, Israel. He is engaged in the neutronics and first-wall interaction in fusion reactors. His past activities have been in the fields of neutron physics, experimental reactor physics, application of nuclear radiation, and nuclear instrumentation.



FUEL CYCLES

MODIFIED FUEL ASSEMBLY DESIGN FOR PRESSURIZED WATER REACTORS WITH IMPROVED FUEL UTILIZATION

*Alex Galperin
Yigal Ronen*

Alex Galperin (top) (MS, engineering physics, Leningrad Polytechnical Institute, USSR, 1969; PhD, nuclear engineering, Ben-Gurion University of the Negev, Beer Sheva, Israel, 1979) is lecturer in the Department of Nuclear Engineering of the Ben-Gurion University. His research interests are in the field of nuclear fuel cycle analysis and particularly improvements in fuel utilization. **Yigal Ronen** (BS, mechanical engineering, and MS, nuclear engineering, 1967, Technion-Israel Institute of Technology; PhD, nuclear engineering, Cornell University, 1970) is associate professor of nuclear engineering at Ben-Gurion University. His research interests include advanced concepts of nuclear reactors and problems in uncertainty analysis.

