



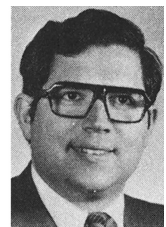
AUTHORS — JANUARY 1983

FISSION REACTORS

CRITICAL HEAT FLUX PREDICTIONS IN ROD BUNDLES

Shih-Ping Kao (photo not available) [BS, nuclear engineering, Georgia Institute of Technology, 1979; MS, nuclear engineering, Massachusetts Institute of Technology (MIT), 1981] is currently a PhD student at MIT. His thesis research is in the modeling of pressurized water reactor natural circulation for the Safety Parameters Display System. For his master's research, he worked on the modeling of constitutive equations for a two-fluid thermal-hydraulic code. **Mujid S. Kazimi** (right) (PhD, nuclear engineering, MIT) is associate professor of nuclear engineering at MIT. His research interests include thermal phenomena in fission reactor safety, advanced two-phase flow model development for reactor transient analysis, and fusion reactor safety.

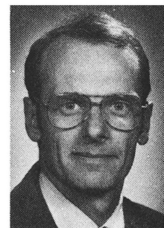
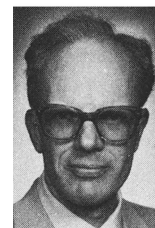
Shih-Ping Kao
Mujid S. Kazimi



PERFORMANCE OF A PRESSURIZED WATER REACTOR POWER ESTIMATION ALGORITHM

Michael O. Fryer (top) (BS, engineering physics, University of California, Berkeley, 1965; PhD, physics, University of Washington, 1972) is an engineering specialist with EG&G Idaho, Inc. He has six years of experience in applying optimal estimation and control techniques to a variety of nuclear and aerospace systems. His current interests are power plant calorimetry and fusion safety research. **William M. Yarbrough** (BA, physics, Emory University, 1958; MS, nuclear engineering, Air Force Institute of Technology, 1955) has for several years been involved in development and performance of the Reactor Physics Test Program, including calorimetrics, at the Loss-of-Fluid Test Reactor and in experimental reactor physics at other EG&G Idaho test reactors.

Michael O. Fryer
William M. Yarbrough



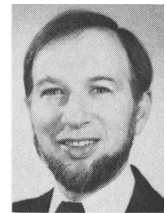
FREQUENCY-DEPENDENT NODAL ANALYSIS OF BOILING WATER REACTOR STABILITY

Jong-Kyun Park (right) [BS, nuclear engineering, Seoul National University, Korea, 1973; ME, nuclear engineering, Rensselaer Polytechnic Institute (RPI), 1979; PhD, nuclear engineering and science, RPI, 1981] is a senior nuclear engineer at Combustion Engineering, Inc. His current interests are in nodal analysis

Jong-Kyun Park
Martin Becker
Goon-Cherl Park



for pressurized water reactor application. **Martin Becker** (top) (BS, New York University, 1960; SM, 1962, and PhD, 1964, Massachusetts Institute of Technology) is professor of nuclear engineering and director of the Center for Technology Assessment at RPI. His current interests include reactor physics, mathematical methods, thermal-hydraulic stability, nuclear waste management, utility system modeling, and energy modeling. **Goon-Cherl Park** (bottom) (BS, 1975, and MS, 1979, Seoul National University, Korea) is a doctoral candidate in nuclear engineering at RPI. Previously he worked for the Korea Atomic Energy Research Institute in the field of reactor physics. His current interests are in the thermal-hydraulic stability analysis of a boiling water reactor.



NUCLEAR SAFETY

A THEORETICAL STUDY OF THE GROWTH OF LARGE SODIUM VAPOR BUBBLES IN LIQUID SODIUM, INCLUDING THE EFFECT OF NONCONDENSABLES AND OF VAPOR CONVECTION

Folco Casadei (top) (PhD, mechanical engineering, Bologna University, Italy, 1978) is currently at the Joint Research Centre, Ispra (EURATOM), working on structural problems for reactor safety analysis. From 1979 to 1982 he has worked on sodium bubble expansion and transient flow through perforated structures at Kernforschungszentrum Karlsruhe (KfK). **Mario Dalle Donne** (PhD, engineering science, Bologna University, Italy, 1956) worked from 1956 to 1959 at Agip Nucleare, Italy, and from 1959 to 1963 at the Dragon Project, England. Since 1973 he has worked at KfK, and since 1976, he has been an associate professor at Karlsruhe University. He has worked in the field of gas-cooled, water, and liquid-metal-cooled reactors. His main technical interests are thermohydraulics, safety, and reactor assessment.

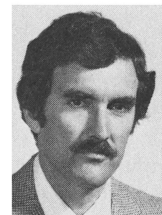
*Folco Casadei
Mario Dalle Donne*



THE WEATHER INFORMATION AND DISPLAY EMERGENCY RESPONSE SYSTEM

Alfred J. Garrett (top) (BS, meteorology, Texas A&M University, 1972; MS, meteorology, Massachusetts Institute of Technology, 1974; PhD, civil engineering, University of Texas, 1978) is research supervisor of the Meteorology Group at the Savannah River Laboratory (SRL). His technical interests and background are in the areas of boundary layer meteorology and atmospheric transport and turbulent diffusion. **Melvin R. Buckner** (center) (BS, 1966, MS, 1968, and PhD, 1970, nuclear engineering, University of Tennessee) is research manager of the Nuclear Physics Division at SRL. His technical interests include environmental aspects of reactor design and operation, risk assessment, and fuel cycle technology. **Richard A. Mueller** (bottom) is the computer system manager and analyst for SRL's Weather Information and Display system. He has worked extensively with computer systems during his 20 years as a Du Pont employee at the Savannah River Plant. His primary interests are in the optimization of emergency response systems for multiple users.

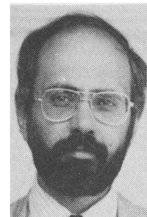
*Alfred J. Garrett
Melvin R. Buckner
Richard A. Mueller*



LARGE POPULATION CENTER AND CORE MELT ACCIDENT CONSIDERATIONS IN SITING

Leonidas Camarinopoulos (top) (Dipl., electrical engineering, 1970, and Dr. Ing., reliability analysis and risk analysis, 1972, Technical University of Berlin, Federal Republic of Germany) is now professor in the Department of Nuclear Engineering at the Technical University of Berlin. His research interests include reliability engineering, fault tree analysis, and risk analysis of technical systems. **George Yadigaroglu** (Dipl., mechanical engineering, Swiss Federal Institute of Technology-Lausanne, 1962; ScD, nuclear engineering, Massachusetts Institute of Technology, 1970) is professor of nuclear engineering at the University of California, Berkeley. Since 1969 he has headed the Nuclear Regulatory Service of the Greek Atomic Energy Commission, which was mostly involved during this period with the siting problems of nuclear power plants.

*Leonidas Camarinopoulos
George Yadigaroglu*



NUCLEAR FUELS

GRABB—A COMPUTER CODE FOR SIMULATING FISSION GAS DISPOSITION IN OXIDE FUEL DURING FAST THERMAL TRANSIENT

Shan H. Chien (top) [BS, nuclear engineering, National Tsing Hua University, Taiwan, 1972; PhD, nuclear engineering, University of California, Los Angeles (UCLA), 1980] was a research assistant at UCLA, working in the field of nuclear fuel element performance. He is currently employed at Southern California Edison and interested in reactor safety analysis. **A. R. Wazzan** (center) (PhD, engineering science, University of California, Berkeley, 1963) is a professor in the Department of Chemical, Nuclear and Thermal Engineering at UCLA. His current fields of interest include light water reactor and fast breeder reactor fuel element modeling, thermal hydraulics of pressurized water reactors, and laminar boundary layers. **D. Okrent** (bottom) (PhD, physics, Harvard University, 1951) is a professor in the Department of Chemical, Nuclear and Thermal Engineering at UCLA. His current fields of interest include nuclear fuel element behavior, reactor safety, and risk benefit.

*Shan H. Chien
A. R. Wazzan
D. Okrent*

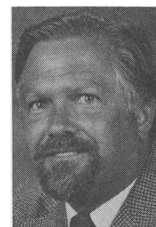


RADIOACTIVE WASTE MANAGEMENT

LIMITING-INDIVIDUAL DOSE FROM AN EXTENDED-SOURCE HIGH-LEVEL WASTE REPOSITORY MODEL

Leslie L. Edwards (top) (BA, mathematics, Willamette University, 1960; MA, mathematics, University of Oregon, 1962) is currently a member of the Special Projects Group in the Atmospheric and Geophysical Sciences Division at the Lawrence Livermore National Laboratory. His technical specialties are computer code development and numerical simulations for physics and engineering. His current technical interests include probabilistic risk analyses for high-level nuclear waste management and atmospheric processes occurring in nuclear reactor containment facilities during hypothetical loss-of-coolant accidents (LOCAs). **Ted F. Harvey** (BA, physics, Stanford University, 1965; MS, 1966, and PhD, 1971, nuclear physics,

*Leslie L. Edwards
Ted F. Harvey*

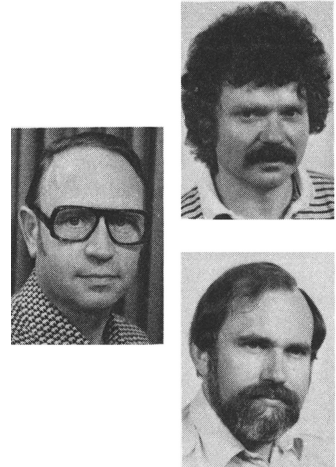


University of California at Davis) is currently a member of the Special Projects Group in the Atmospheric and Geophysical Sciences Division at the Lawrence Livermore National Laboratory. His current technical interests include probabilistic risk analysis for high-level nuclear waste management and atmospheric processes occurring in containment facilities during LOCAs.

MIGRATION OF CONCENTRATED RADIONUCLIDE SOLUTIONS IN WATER-SATURATED SOIL—INVESTIGATION OF A HYPOTHETICAL HIGH ACTIVITY WASTE SOLUTION DISCHARGE ACCIDENT

Klemens Schwarzer (top) (MS, nuclear engineering, Technical University of Berlin, 1974; PhD, engineering science, Technical University of Aachen, 1978) is concerned with fission product behavior and, in particular, the transport of radionuclides into the environment. **Josef Thelen** (center) (mechanical engineer) is currently interested in the experimental side of radionuclide migration with emphasis on sorption experiments. **Werner Katscher** (bottom) (MS, engineering science, Technical University of Aachen, 1966; PhD, engineering science, Technical University of Aachen, 1975) is head of the Department for Safety Experiments at the Institute for Nuclear Safety Research, which is engaged in research of fission product transport in soil and of graphite corrosion in high-temperature gas-cooled reactors under severe accident conditions.

*Klemens Schwarzer
Josef Thelen
Werner Katscher*



MATERIALS

UNIAXIAL IN-REACTOR CREEP OF ZIRCALOY-2: STRESS, FLUX, AND TEMPERATURE DEPENDENCE

Franco Tinti

Franco Tinti is employed by the Laboratorio Materiali, Materials Division of Comitato Nazionale per l'Energia Nucleare. Since 1966, he has been working in the area of core materials for thermal reactors with particular interest in fabrication, physical metallurgy, and corrosion. His current interest is in radiation effects on structural materials.



RADIATION BIOLOGY AND ENVIRONMENT

ASSESSMENT OF RADIATION DOSE AND EFFECTS FROM RADON AND ITS PROGENY IN ENERGY-EFFICIENT HOMES

Werner Burkart

Werner Burkart (PhD, biochemistry, Swiss Institute of Technology, 1973) worked for several years at the University of Basel and, during the summer, at the Marine Biological Laboratory in Woods Hole, Cape Cod, on cell/cell interaction in tissue formation. After a year's stay at the Institute of Environmental Medicine, New York University, he started to work at the Swiss Federal Institute for Reactor Research. His current research interests include susceptibility to radiation during cell differentiation and dose effect relationships at low levels of radiation.

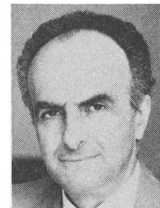
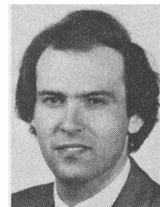


STUDY OF STREAM FLOW EFFECTS ON BUBBLE MOTION*Samir S. Sami*

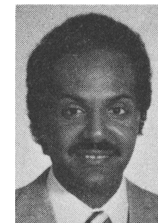
Samir S. Sami (BSc, engineering, 1973, and MSc A., mechanical engineering, Cairo University, Egypt; PhD, mechanical engineering, University of Montréal, 1981) is an analyst in the Groupe d'Analyse Nucléaire, École Polytechnique, where he is working on thermohydraulic transient analysis of Canada deuterium-uranium reactors. Since his graduation, he has been mainly involved in two-phase flow dynamics, with particular interest in turbulent dispersed two-phase flow.

**THERMODYNAMIC DISEQUILIBRIUM IN THE CRITICAL FLOW OF SUBCOOLED LIQUIDS***Gian Piero Celata**Maurizio Cumo**Giovanni Elvio Farello**Pier Carmelo Incalcaterra**Antonio Naviglio*

Gian Piero Celata (top right) (nuclear engineering, Rome University, 1980) has performed thesis research on void fraction measurements. He is presently involved in fluid flow and heat transfer, particularly critical flows and jet forces, at the Heat Transfer Laboratory of CRE Casaccia, Ente Nazionale Energie Alternative (ENEA) (formerly Comitato Nazionale per l'Energie Nucleare). **Maurizio Cumo** (top left) (nuclear engineering, Politecnico di Milano, 1962) is a full professor of nuclear power plants at the University of Rome and consultant to ENEA. He is presently director of the Laboratorio di Impianti Nucleari at Rome University. **Giovanni Elvio Farello** (center right) (mechanical engineering, Rome University, 1953) is director of the Heat Transfer Laboratory of ENEA and assistant to the director of the Energy Program, Consiglio Nazionale delle Ricerche. **Pier Carmelo Incalcaterra** (bottom left) (nuclear engineering, Rome University, 1975) has been involved in thermohydraulic plant projecting. His current interests include loop management for jet forces and impingement load investigation at ENEA's Heat Transfer Laboratory. **Antonio Naviglio** (bottom right) (nuclear engineering, Rome University, 1973) is a professor of thermal hydraulics at the University of Rome and is involved in the research and development of heat transfer systems and equipment. He has worked since 1973 on problems related to thermodynamics and hydraulics in the fields of the production of electric power.

**STEADY-STATE AND TRANSIENT PREDICTION OF A 19-TUBE ONCE-THROUGH STEAM GENERATOR USING RELAPS/MOD1***Yassin A. Hassan**Charles D. Morgan*

Yassin A. Hassan (top) (BSc, nuclear engineering, Alexandria University, 1968; MS, 1975, and PhD, 1979, nuclear engineering, University of Illinois) is a senior engineer at the Nuclear Power Generation Division, Babcock & Wilcox Company (B&W), Lynchburg, Virginia. He is responsible for developing, modifying, and maintaining various thermal-hydraulic computer codes and is currently involved in the development and application of three-dimensional codes, especially those relevant to the thermal shock problem in pressurized water reactors. **Charles D. Morgan** (ME, Stevens Institute of Technology, 1956; MS, mechanical engineering, Rensselaer Polytechnic Institute, 1960; PhD, mechanical engineering, Lehigh University, 1965) is



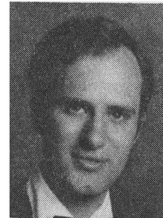
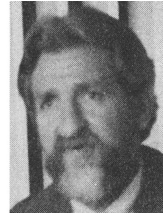
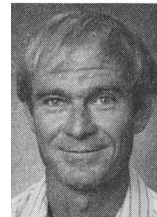
currently a technical consultant to the manager of engineering, Nuclear Power Generation Division, B&W. He has been active in the thermal-hydraulic aspects of light water reactor design for more than 20 years, including critical heat flux test planning and correlation, computer code development, and systems analysis.

TECHNIQUES

DEVELOPMENT OF A WIDE RANGE ENVIRONMENTAL GAMMA-RAY DOSIMETER

W. Reed Johnson (top right) (BS, physics, Virginia Military Institute, 1953; Oak Ridge School of Reactor Technology, 1954; DrSc, University of Virginia, 1962) is a professor of nuclear engineering at the University of Virginia. Since 1974, he has served as a part-time member of the Atomic Safety and Licensing Appeal Board. **Rion A. Causey** (top left) (PhD, nuclear engineering, North Carolina State University, 1977) is an assistant professor at the University of Virginia. His current research is in the area of fusion reactor materials. **Paul J. Rodi, Jr.** (bottom right) (BS, nuclear science and computer science, State University of New York-Maritime College, 1980; ME, nuclear engineering, University of Virginia, 1982) is currently employed with the Virginia Electric Power Company as an associate engineer. His research interests are in the area of coolant activity analysis. **Gustave E. Carlson** (bottom left) (BS, nuclear engineering, University of Virginia, 1980) is currently serving as sonar officer aboard the U.S.S. *Tinosa* in Groton, Connecticut.

*W. Reed Johnson
Rion A. Causey
Paul J. Rodi
Gustave E. Carlson*



NEUTRON MOISTURE METERS: THE EFFECTS OF VARIOUS SOIL PARAMETERS

David J. Wilson (BSc, University of Bristol, England, 1958) has worked in the field of reactor physics for the United Kingdom Atomic Energy Authority at Harwell and Winfrith. Currently with the Australian Atomic Energy Commission, his main interests are nuclear techniques, especially in archaeometry.

David J. Wilson

