

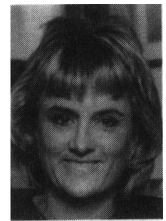
AUTHORS — APRIL 1990

FISSION REACTORS

A COMPUTERIZED DIAGNOSTIC SYSTEM FOR NUCLEAR PLANT CONTROL ROOMS BASED ON STATISTICAL QUALITY CONTROL

Carolyn D. Heising (top) (BS, applied physics, 1974, University of California, San Diego; MS, nuclear engineering, 1975, and PhD, mechanical engineering, 1978, Stanford University) is a professor of industrial engineering at Northeastern University in Boston. She was previously an assistant professor of nuclear engineering at Massachusetts Institute of Technology. Her research interests include reliability analysis, risk assessment, nuclear reactor safety, and quality control. **William S. Grenzebach** (MS, industrial engineering, Northeastern University, 1988; MS, management of technology, Boston University, 1988) is a consultant with Applied Management Consultants. He has an extensive background in quality assurance and project management in both the nuclear and petroleum industries.

*Carolyn D. Heising
William S. Grenzebach*

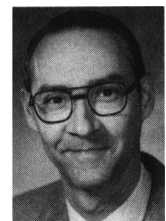


NUCLEAR SAFETY

IODINE PARTITIONING IN PRESSURIZED WATER REACTOR STEAM GENERATOR ACCIDENTS

Edward C. Beahm (top right) (PhD, chemistry, Pennsylvania State University, 1973) joined Oak Ridge National Laboratory (ORNL) in 1974. Since 1983, he has been studying the chemistry and transport of fission products in light water reactor containments. **Steven R. Daish** (top left) (BSc, chemistry, Aston University, United Kingdom, 1978) was a visiting scientist at ORNL in 1987–1988. He is currently studying catalysis at British Petroleum Research. **William E. Shockley** (bottom right) is a senior science technologist with 40 years of experience at ORNL. Much of his work has been in developing ion-exchange techniques and processes for the retention of iodine in reprocess wastes. **Joram Hopenfeld** (bottom left) (PhD, engineering, University of California, Los Angeles, 1967) is interested in heat transfer, fluid flow, and corrosion.

*Edward C. Beahm
Steven R. Daish
William E. Shockley
Joram Hopenfeld*



MEASUREMENTS OF RADIOIODINE SPECIES IN SAMPLES OF PRESSURIZED WATER REACTOR COOLANT

Paul G. Voillequé

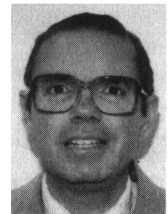
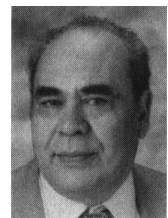


Paul G. Voillequé [BA, physics, University of Colorado, 1961; Master of Basic Science (physics, chemistry, biology), University of Colorado, 1965; MS, radiological health, University of Michigan, 1966] is a technical adviser in utility services operations at Science Applications International Corporation (SAIC). His broad interests in radiation protection include the behavior of radionuclides within nuclear facilities and in the environment around them. Since joining SAIC in 1975, he has participated in several field measurement studies of radionuclide behavior and monitoring at operating power plants.

AUTOMATION OF NUCLEAR POWER PLANTS

Abdo A. Husseiny (top right) (PhD, nuclear engineering, University of Wisconsin, 1969) is the chief executive officer of Technology International Incorporated (TII). He was a division manager at Science Applications International Corporation and worked at Iowa State University, Carnegie-Mellon University, University of Missouri-Rolla, and Brown Boveri-Austria. His research interests are in automation, decision analysis, and system identification. **Zeinab A. Sabri** (top left) (PhD, nuclear engineering, University of Wisconsin, 1973) is the president of TII. She worked as assistant to the senior vice president of nuclear operations at Louisiana Power and Light and as associate professor of nuclear engineering at Iowa State University. Her research interests are in risk assessment, human reliability, and robotics. **S. Keith Adams** (bottom right) (PhD, industrial engineering, Arizona State University, 1966) is associate professor of industrial engineering at Iowa State University. He worked at TII, Essex Corporation, Rockwell International, and Oklahoma State University. His research interests are in ergonomics and safety engineering. **Rodrigo J. Rodriguez** (bottom left) (MS, mechanical engineering, University of New Orleans, 1987) is an engineer at TII. His research interests are in control design and system modeling.

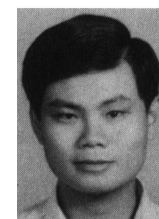
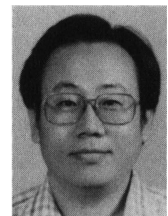
*Abdo A. Husseiny
Zeinab A. Sabri
S. Keith Adams
Rodrigo J. Rodriguez*



ASSESSMENT OF THE SAFETY FUNCTION FOR THE ANTICIPATED TRANSIENT WITHOUT TRIP MITIGATION SYSTEM ACTUATION CIRCUITRY AT MAANSHAN NUCLEAR POWER STATION

*Bau-Shei Pei
Ge-Ping Yu
Guei-Ching Lin
Yin-Pang Ma*

Bau-Shei Pei (top) [BS, nuclear engineering, National Tsing-Hua University (NTU), Taiwan, 1975; MS, 1980, and PhD, 1981, nuclear engineering, University of Cincinnati] is a professor in the Department of Nuclear Engineering at NTU. His research interests are in two-phase flow and heat transfer, reactor safety analysis, and severe core damage study. **Ge-Ping Yu** (bottom) (BS, 1974, and MS, 1978, nuclear engineering, NTU, Taiwan; ScD, nuclear engineering, Massachusetts Institute of Technology, 1981) is a professor in the Department of Nuclear Engineering at NTU. He has done research in nuclear materials engineering and reactor safety analysis. His current research is on RELAP5-MOD2 code assessment, erosion-corrosion of carbon steel, and



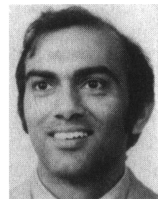
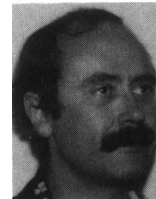
safety analysis of advanced light water reactors. **Guei-Ching Lin** (top) (BS, 1987, nuclear engineering, NTU, Taiwan) is a graduate student in the Department of Nuclear Engineering at NTU. His research interests are in two-phase flow and heat transfer and reactor safety analysis. **Yin-Pang Ma** (bottom) (BS, mechanical engineering, Chung-Cheng Institute of Technology, Taiwan, 1977) is a doctoral student in the Department of Nuclear Engineering at NTU. He has 5 years' nuclear power plant experience and 3 years' reactor safety analysis experience. His research interests include reactor safety analysis and phase separation of two-phase flow in branching conduits.



ASSESSMENT OF UNCERTAINTIES IN EARLY OFF-SITE CONSEQUENCES FROM NUCLEAR REACTOR ACCIDENTS

Imtiaz K. Madni (top) (PhD, mechanical engineering, Iowa State University, 1975) is a staff scientist at Brookhaven National Laboratory (BNL). His technical interests include computational fluid dynamics and heat transfer, system simulation, reactor safety, and off-site consequence modeling. **Erik G. Cazzoli** (center) (PhD, physics, Bologna University, Italy, 1972) is a research scientist at BNL. His research interests include numerical methods, reactor safety, and probabilistic risk assessment. **Mohsen Khatib-Rahbar** (bottom) (PhD, nuclear science and engineering, Cornell University, 1977; BS, chemical engineering, University of Minnesota, 1974) was a staff scientist at BNL for more than 11 years before founding Energy Research, Inc. His research interests include reactor dynamics, thermal hydraulics, numerical methods, light water reactor and liquid-metal fast breeder reactor system simulation and control, reactor safety, and probabilistic risk assessment.

*Imtiaz K. Madni
Erik G. Cazzoli
Mohsen Khatib-Rahbar*



RADIOACTIVE WASTE MANAGEMENT

MEASURING AND PREDICTING GAMMA RADIATION FROM RADIOACTIVE GLASS-FILLED CANISTERS

Richard D. Peters (top) (BS, chemistry, University of the Pacific, 1975; MS, chemical engineering, University of California, Berkeley, 1978) is a senior research engineer with Pacific Northwest Laboratory (PNL). Since joining PNL in 1978, he has worked on development of high-level waste vitrification technology and characterization of borosilicate glass waste forms. He is currently involved in physical modeling of joule-heated glass melters and volume reduction of activated waste metals. **Urban P. Jenquin** (center) (BS, applied mathematics and engineering physics, University of Wisconsin, 1963) is a senior research scientist at PNL, where he has worked for 25 years. His current interests include shielding, neutronics, and fuel cycle analysis. **Langdon K. Holton, Jr.** (bottom) (BS, chemical engineering, University of California, Berkeley, 1977; MS, chemical engineering, 1981; MBA, University of Washington, 1986) is a staff engineer at PNL. He is responsible for radiochemical operations in the PNL Waste Technology Center. His interests include decontamination, decommissioning, and radiochemical engineering.

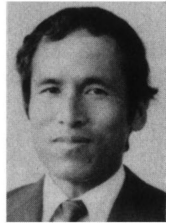
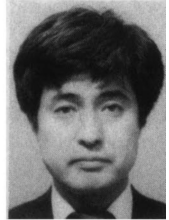
*Richard D. Peters
Urban P. Jenquin
Langdon K. Holton, Jr.*



STUDIES ON THE APPLICABILITY OF A FLOW COUPLER TO A LIQUID-METAL FAST BREEDER REACTOR PLANT

Sadao Hattori (top right) (MS, nuclear engineering, Tokyo Institute of Technology, Japan, 1959; PhD, nuclear engineering, University of Tokyo, Japan, 1988) is vice president in charge of nuclear energy at the Central Research Institute of the Electric Power Industry (CRIEPI). He has worked in the design, safety, and licensing of light water reactors for the Chubu Electric Power Company and in the design, licensing, and construction of the Fugen nuclear power plant for the Power Reactor and Nuclear Fuel Development Corporation. He also served as director of the liquid-metal fast breeder reactor research project at CRIEPI. **Tadasu Takuma** (top left) (BS, 1961; MS, 1963; and PhD, 1966, electrical engineering, University of Tokyo, Japan) is a research director at CRIEPI and a visiting professor at the graduate school of engineering sciences at Kyushu University. He has been involved in the study of gas charge, environmental problems, and numerical field calculations. **Koshichi Nemoto** (center right) (MS, electrical engineering, University of Tokyo, Japan, 1984) is a research engineer at CRIEPI. His primary interests are the analysis of magnetohydrodynamics and laser technology. **Masafumi Terada** (bottom left) (MS, metrology, Tokyo University, Japan, 1974) has worked in the nuclear power plant instrumentation and control design section of Mitsubishi Heavy Industries (MHI) since 1974. He is currently designing instrumentation for the Japanese fast breeder reactor demonstration plant. **Tamotsu Sano** (bottom right) (MS, nuclear engineering, Osaka University, Japan, 1972) is a research engineer at the MHI Takasago Research and Development Center. He is involved in sodium technology and the safety and thermal hydraulics of fast breeder reactors.

*Sadao Hattori
Tadasu Takuma
Koshichi Nemoto
Masafumi Terada
Tamotsu Sano*

**UTSG-2 — A THEORETICAL MODEL DESCRIBING THE TRANSIENT BEHAVIOR OF A PRESSURIZED WATER REACTOR NATURAL-CIRCULATION U-TUBE STEAM GENERATOR**

Alois Höld (Magister degree and PhD, theoretical physics and mathematics, University of Vienna, Austria, 1960) is a senior scientist at Gesellschaft für Reaktorsicherheit. His research interests are in normal and abnormal transient behavior of nuclear power plants and steam generators, thermohydrodynamics and two-phase flow, heat transfer and conduction, three-dimensional nuclear kinetics, optimal digital control, noise analysis, and frequency response models.

Alois Höld

