



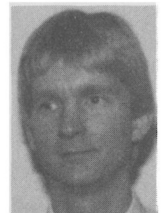
## AUTHORS — JULY 1986

### FISSION REACTORS

#### **AUTOMATIC DETERMINATION OF PRESSURIZED WATER REACTOR CORE LOADING PATTERNS THAT MAXIMIZE BEGINNING-OF-CYCLE REACTIVITY WITHIN POWER-PEAKING AND BURNUP CONSTRAINTS**

**Gregory H. Hobson** (top) (BS, 1981, and PhD, 1985, nuclear engineering, North Carolina State University) is an engineer in the Fuel Engineering Section of the Nuclear Power Division of Babcock & Wilcox. His current interest is nuclear fuel management optimization. **Paul J. Turinsky** (BS, chemical engineering, University of Rhode Island, 1966; MSE, 1967, and PhD, 1970, nuclear engineering, University of Michigan; MBA, business administration, University of Pittsburgh, 1979) is a professor and head of the Department of Nuclear Engineering at North Carolina State University. He previously was manager of core development in the Water Reactor Divisions of Westinghouse Electric Corporation. His current research activities are concerned with nuclear fuel management optimization and development of numerical algorithms used in core physics and analysis well suited to parallel computer architectures.

*Gregory H. Hobson  
Paul J. Turinsky*



#### **SHIELDING DESIGNS FOR PRESSURIZED WATER REACTORS IN FRANCE**

**Gilles Champion** (top) (Dr., nuclear physics, University of Grenoble, France, 1979) is a member of the health physics group in the thermal and nuclear projects design department of Electricité de France (EDF) (SEPTEN). His current technical activities are in the assessment of exposure to mixed-neutron gamma radiation fields and in shielding design. He is concerned with measurements and streaming calculations. **Josette Forestier** (center) (BA, physics and chemistry, Science University of Montpellier, France, 1970) is an engineer in the reactor department of EDF (Alps-Marseilles-Engineering). Her current technical activities concern nuclear safety, radiological protection, and operating technical specifications. **Thérèse Vergnaud** (bottom)

*Gilles Champion  
Josette Forestier  
Thérèse Vergnaud*

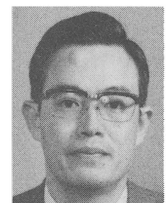
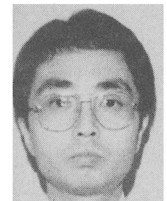


(graduate, mathematics, University of Paris, France, 1961) joined the Commissariat à l'Energie Atomique in 1961 and since 1969 has worked in the field of the Monte Carlo method. Her interests include the development of the Monte Carlo transport code TRIPOLI and its use for solving complex shielding problems.

### A STUDY ON FUEL ROD VIBRATION INDUCED BY BAFFLE JET FLOW

**Kazuichiro Seki** (top right) (BS, electrical engineering, Kyoto University, 1961) is deputy manager of the nuclear fuel department, Kansai Electric Power Company (KEPCO). His current main interest is in nuclear fuel cycle engineering. **Shigeru Kuwabara** (top left) (MS, electronics engineering, Kyoto University, 1972) is manager of the safety control section, Takahama Power Station, KEPCO. His current interest is in the increased plant load factor. **Katsumi Tanimura** (center right) (MS, electrical engineering, Osaka University, 1978) is a staff member of the nuclear fuel engineering section, KEPCO. At present he is working on the quality control of pressurized water reactor (PWR) fuel fabrication. **Shinsuke Matsumoto** (bottom left) (MS, precision engineering, Osaka University, 1978) is chief engineer of Nuclear Fuel Industries Ltd. (NFI). He is now working on the mechanical design of PWR fuel. His interests are in the mechanical and irradiation properties of PWR fuel. **Masao Toba** (bottom right) (BS, electrical engineering, Tokyo Institute of Technology, 1965) is deputy general manager of the core engineering department at NFI. His current assignment is on the design of PWR cores and fuel management.

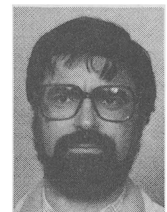
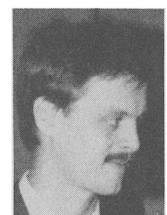
*Kazuichiro Seki  
Shigeru Kuwabara  
Katsumi Tanimura  
Shinsuke Matsumoto  
Masao Toba*



### STABILITY TESTS AT BROWNS FERRY UNIT 1 UNDER SINGLE-LOOP OPERATING CONDITIONS

**Jose March-Leuba** (top right) (MS, industrial engineering, Politecnico University of Valencia, Spain, 1978; MS, 1982, and PhD, 1985, nuclear engineering, University of Tennessee) is currently involved in strategic defense initiative research under temporary assignment to the Spanish Armed Forces. His research interests are in the areas of nonlinear dynamics and noise surveillance and diagnostics. **Richard T. Wood** (top left) (BS, 1980, and PhD, 1986, nuclear engineering, University of Tennessee) is a research engineer in the Instrumentation and Controls (I&C) Division at Oak Ridge National Laboratory (ORNL). His activities include application of advanced control theory techniques and the development of noise surveillance and diagnostic capabilities for various processes. **Pedro J. Otaduy** (bottom right) (BS, 1969, and MS, 1973, industrial engineering, University of Bilbao, Spain; MS, 1974, and PhD, 1979, nuclear engineering, University of Florida) is a research scientist at ORNL's I&C Division. His research interests are in the areas of artificial intelligence, automatic control, and nuclear plant monitoring and operation. **Clayton O. McNew** (bottom left) (University of Tennessee alumnus) was a senior engineering assistant at ORNL's I&C Division prior to his recent retirement. His primary research interest now is in the field of football.

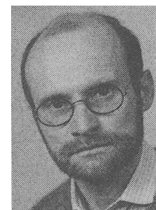
*Jose March-Leuba  
Richard T. Wood  
Pedro J. Otaduy  
Clayton O. McNew*



### EXPERIENCE IN THE USE OF PROBABILISTIC SAFETY ANALYSIS FOR THE DEVELOPMENT OF SAFETY CONCEPTS FOR COMMERCIAL HIGH-TEMPERATURE REACTORS

**Wolfgang Kröger** (top) [Dr.-Ing., Technische Hochschule Aachen, Federal Republic of Germany (FRG), 1974] is division head and deputy leader of the Institute for Nuclear Safety Research of the Kernforschungsanlage Jülich (KFA). He is mainly interested in probabilistic risk/safety assessment as well as in the development of advanced safety and siting concepts, particularly for high-temperature reactors (HTRs). **Johannes P. Wolters** (Dr.-Ing., Technische Hochschule Aachen, FRG, 1979) is head of a division at the Institute for Nuclear Safety Research of the KFA. His main interest is in the deterministic analysis of reactor accidents, particularly for HTR systems. He directed safety studies for several HTR concepts.

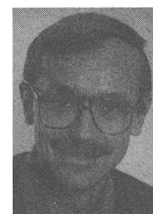
*Wolfgang Kröger  
Johannes P. Wolters*



### COMPUTER SIMULATION OF A LARGE-SCALE REPROCESSING PLANT FOR SAFEGUARDS

**G. Spannagel** (top) [PhD, physics, University of Heidelberg, Federal Republic of Germany (FRG), 1968] is a senior scientist of the Nuclear Research Center at Karlsruhe, FRG. He has worked in several areas, for example, radioecology, climatology, energy conversion techniques, cosmic rays, interplanetary material, and nuclear physics. At present, he is engaged in mathematical modeling. **M. J. Canty** (center) (PhD, nuclear physics, University of Manitoba, 1969) is a member of the program group "Technology and Society" at the Nuclear Research Center, Jülich, FRG. He is engaged in system analytical studies of safeguards approaches for the commercial nuclear fuel cycle within the framework of the Nuclear Weapons Non-Proliferation Treaty. **E. A. Kern** (bottom) (BS, mechanical engineering, Michigan Technological University, 1956; MS, mechanical engineering, Ohio State University, 1957; PhD, aerospace engineering, University of Michigan, 1968) is a staff member in the safeguards assay group at Los Alamos National Laboratory. He has worked in safeguards for the last 9 years with emphasis on the computer simulation of nuclear processing plants and nuclear waste transportation networks. He is currently engaged in developing software for real-time control of nuclear safeguards instruments and in designing a computer network for nuclear waste management.

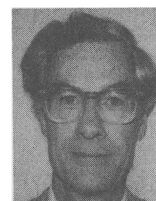
*G. Spannagel  
M. J. Canty  
E. A. Kern*



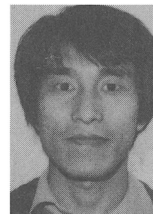
### ROLE OF SURFACE VAPORIZATION IN LOW-VOLATILITY FISSION PRODUCT RELEASE EXPERIMENTS

**A. B. Reynolds** (right) (BS, physics, 1953; MS, nuclear engineering, 1955; and ScD, chemical engineering, 1959, Massachusetts Institute of Technology) is a professor of nuclear engineering at the University of Virginia. His research interests include fast

*A. B. Reynolds  
J. L. Kelly  
S. T. Kim*



reactor safety, thermal hydraulics, and fission product behavior. **J. L. Kelly** (right) (BS, Tulane, 1950; MS, 1960, and PhD, 1962, chemical engineering, Louisiana State University) is a professor of nuclear engineering at the University of Virginia. His research interests are iodine chemistry, radiation processing, and fission product behavior. **S. T. Kim** (left) (BS, nuclear engineering, Seoul National University, 1977; MS, nuclear engineering, Carnegie Mellon University, 1983) is a graduate research assistant at the University of Virginia. His current research interest is computational transport theory.



## MATERIALS

### THE EFFECT OF FAST-NEUTRON IRRADIATION ON THE FATIGUE-CRACK GROWTH BEHAVIOR OF SEVERAL AUSTENITIC STAINLESS STEELS AND WELDMENTS

**Lee A. James** (BS, mechanical engineering, 1959; MS, mechanical engineering, University of Washington, 1965) is a fellow engineer with the Westinghouse Hanford Company. He has been engaged for many years in the characterization of materials behavior using fracture mechanics techniques and in the application of fracture mechanics to reactor structural components.

*Lee A. James*



## HEAT TRANSFER AND FLUID FLOW

### SIMULATION OF HEAT AND MASS TRANSFER IN MOLTEN CORE/CONCRETE INTERACTIONS

**I. K. Paik** (top) [BSC, nuclear engineering, Seoul National University, South Korea, 1973; MS, 1979, and PhD, 1982, nuclear engineering, University of Wisconsin-Madison (UW)] is a senior engineer at the Nuclear Fuel Division, Westinghouse Electric Corporation. His interests include nuclear reactor safety, thermal-hydraulic testing, and analysis. Currently, he is involved in departure from nucleate boiling and hydraulic testing and analysis of new Westinghouse fuel products. **S. I. Abdel-Khalik** (PhD, mechanical engineering, UW, 1973) is a professor of nuclear engineering at UW. He joined the UW faculty in 1976 after two years of post-doctoral work in chemical engineering and one year with the nuclear industry. His current research interests are in the areas of reactor safety and fusion technology.

*I. K. Paik*  
*S. I. Abdel-Khalik*

