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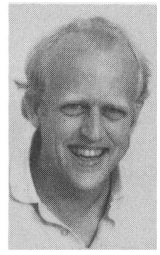
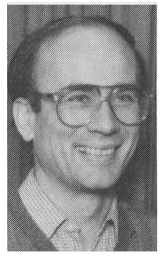
AUTHORS — MARCH 1984

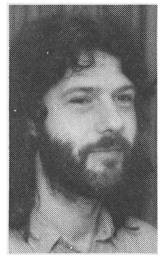
FISSION REACTORS

DEVELOPMENT AND TEST OF THE THREE-DIMENSIONAL COMPUTER CODE ZELT-3D FOR UNFOLDING POWER DISTRIBUTIONS USING SIDE REFLECTOR INSTRUMENTATION SIGNALS

Paulo J. Knob
Ralf D. Neef
Hartwig Schaal





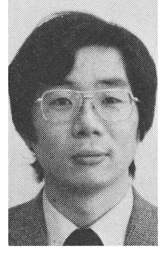


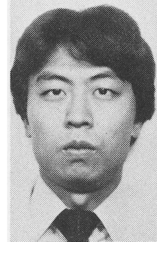
Paulo J. Knob (top) (MS, electric engineering, Instituto Militar de Engenharia, Rio de Janeiro, 1978; Dr.-Ing., Rheinisch-Westfälische Technische Hochschule Aachen, 1982) has worked on out-of-core instrumentation systems for high-temperature gas-cooled reactors (HTGRs). He has recently returned to Brazil. **Ralf D. Neef** (center) (Dr. rer. nat., Rheinisch-Westfälische Technische Hochschule Aachen, 1976) is a staff scientist of the Institut für Reaktorentwicklung (IRE) at Kernforschungsanlage (KFA) Jülich GmbH. He has worked on the analysis and interpretation of critical experiments and on theoretical studies of ex-core instrumentation systems for pebble bed HTGRs. His current research interests include the neutronic layout of a spallation intense neutron source and its cold and thermal moderators. **Hartwig Schaal** (bottom) (Dr.-Ing., Universität Stuttgart, 1982) is a staff scientist of IRE at KFA Jülich. He has worked on the analysis and interpretation of critical experiments of different HTGRs. His current interests include deep penetration problems, especially the layout of a spallation neutron source shield.

NUCLEAR SAFETY

AN EVENT-ORIENTED METHOD FOR DETERMINING OPERATION GUIDES UNDER EMERGENCY CONDITIONS IN BOILING WATER REACTORS

Yukiharu Ohga
Shunsuke Utena





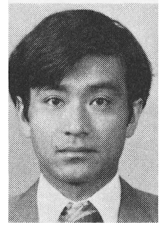
Yukiharu Ohga (top) (MS, nuclear engineering, Kyoto University, Japan, 1976) works in the area of computer-aided operation support systems for nuclear power plants at the Energy Research Laboratory of Hitachi, Ltd., Japan. His current interests are in the area of simulators of nuclear power plants under transient conditions. **Shunsuke Utena** (BS, electrical engineering, Waseda University, Japan, 1980) is an engineer in Hitachi Works of Hitachi, Ltd. where he is developing a computer-aided operation support system for boiling water reactor (BWR) power plants. His current interests are in the area of transient analysis models of BWR instrumentation systems.

CHEMICAL PROCESSING

RECOVERY OF 3%-ENRICHED URANIUM BY MEANS OF A CHEMICAL METHOD

Tetsuya Miyake
Kunihiko Takeda
Kazuo Imamura
Heiichiro Obanawa



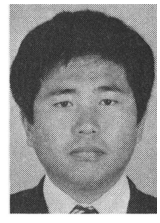
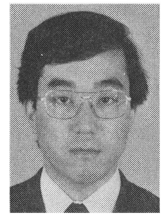
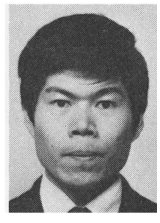
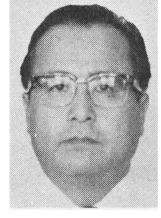



Tetsuya Miyake (top right) (BS, applied chemistry, Tokyo University, 1959; MS, chemical engineering, University of Minnesota, 1965) is head of the Uranium Enrichment Research Laboratory (UERL). He has been working since 1959 with Asahi Chemical Industry Co., Ltd., in its Research and Development Division. His main interest is in applications development for ion-exchange resins and membranes. **Kunihiko Takeda** (top left) (BS, physical chemistry, Tokyo University, 1966) is manager and chief chemist of basic research at UERL. His interests include basic phenomena of separation processes and preparation of organic and inorganic adsorbents. **Kazuo Imamura** (bottom right) (BS, 1970, and MS, 1972, applied chemistry, Kyoto University) is a senior chemist in process development at UERL. He is engaged primarily in the preparation of ion-exchange resins and development of bench-scale operations. **Heiichiro Obanawa** (bottom left) (BS, 1972, and MS, 1974, physical chemistry, Tokyo University) is a senior chemist in basic research at UERL. His main interest is in applications development for ion-exchange resins in various separation processes.

NUCLEAR FUELS

CONCEPTUAL DESIGN OF A HIGH-BURNUP FUEL ROD FOR BOILING WATER REACTORS USING LOW-DENSITY UO_2 PELLETS OF AN ANNULAR TYPE

Kazuo Hiramoto
Motoo Aoyama
Masaharu Sakagami
Renzo Takeda

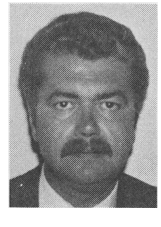





Kazuo Hiramoto (top right) (BS, 1976, and MS, 1978, electrical engineering, Kyoto University) is a researcher at the Energy Research Laboratory (ERL), Hitachi Ltd. His current interests include high-burnup fuel design for boiling water reactors (BWRs). **Motoo Aoyama** (top left) (BS, 1977, and MS, 1979, nuclear engineering, Kyoto University) is a researcher at ERL and his current interest includes BWR core design for fuel cycle improvement. **Masaharu Sakagami** (bottom right) (PhD, nuclear physics, Osaka University, 1972) is a senior researcher at ERL. Since 1974, he has been engaged in nuclear fuel design, evaluation of nuclear fuel performance, and reactor operating maneuvers for BWRs. **Renzo Takeda** (bottom left) (PhD, nuclear engineering, Kyoto University, 1980) is a chief researcher at ERL. He is currently interested in nuclear steam system design.

ECONOMICS

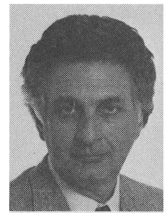
APPLICATION OF VALUE-IMPACT METHODOLOGY IN THE DESIGN ANALYSIS OF A NUCLEAR SAFETY SYSTEM

Michael G. Stamatelatos
Daisy M. Ligon
Achilles G. Adamantiades



Michael G. Stamatelatos (right) (BS, 1964; MS, 1965; PhD, 1970, nuclear engineering, Columbia University, New York) is manager of safety and reliability at GA Technologies Inc. in San Diego, California. His experience includes nuclear power design, probabilistic and deterministic safety and reliability analysis, and methodology development and value-impact methodology for

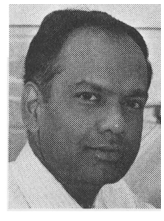
decision analysis. **Daisy M. Ligon** (top) (BA, chemistry, University of the Philippines, 1969; National University, 1982) is a staff engineer in the Licensing, Reliability and Systems Department at GA Technologies Inc. where she is involved in probabilistic risk and reliability assessment and in cost-benefit evaluations of industrial systems. **Achilles G. Adamantiades** (bottom) (Diploma, mechanical and electrical engineering, National Metsovion Polytechnion of Athens, Greece, 1957; PhD, nuclear engineering, Massachusetts Institute of Technology, 1966) is a project manager in the Nuclear Division of the Electric Power Research Institute. For the past several years he has been engaged in a number of areas focusing on safety aspects of nuclear power. His current interests are in the areas of transient fuel behavior, core performance computer codes, and alternate systems.



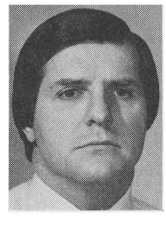
MATERIALS

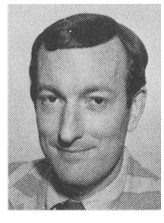
DYNAMIC FRACTURE TOUGHNESS OF IRRADIATED A533 GRADE B CLASS 1 PRESSURE VESSEL STEEL

K. Linga Murty
Regis P. Shogan
Warren H. Bamford



K. Linga Murty (top) (MSc, physics, Andhra University, India, 1963; MS, 1967, and PhD, 1970, materials science and engineering, Cornell University) is associate professor in the nuclear engineering and materials engineering departments at North Carolina State University, Raleigh, and has been involved in research on the effects of aggressive environment and neutron exposure on the mechanical properties and fracture characteristics of metals. He has been actively pursuing research on creep and mechanical anisotropy of Zircaloy and embrittlement of nuclear pressure vessel steels. He is currently involved in studies on the improvement of mechanical properties of metals through laser surface treatment and ion implantation. **Regis P. Shogan** (center) (BS, 1966, and MS, 1971, metallurgy and materials science, Carnegie-Mellon University) is supervisor of the Remote Metallographic Facility at Westinghouse Research Center in Pittsburgh. He has 17 years of experience investigating radiation damage in structural materials and presently manages the Westinghouse material's hot cell facilities. He is also responsible for a variety of programs involving mechanical and corrosion properties of power reactor materials. **Warren H. Bamford** (bottom) is a lead engineer for the Westinghouse Nuclear Technology Division in Pittsburgh, Pennsylvania, engaged in development and applications in support of structural integrity analysis of both nuclear and nonnuclear components. Research emphasis has been in the areas of environmental fatigue crack growth, elastic and plastic fracture, and irradiation effects.

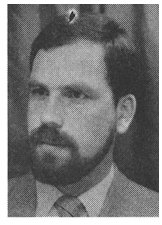


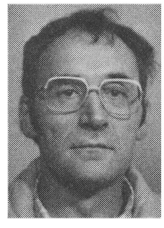


HEAT TRANSFER AND FLUID FLOW

EXPERIMENTAL STUDIES OF PENETRATION OF A HOT LIQUID POOL INTO A MELTING MISCIBLE SUBSTRATE

Gismar Eck
Heinrich Werle

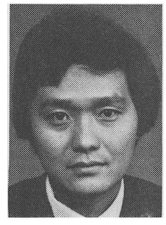




Gismar Eck (top) (Dr. Ing., University of Karlsruhe, 1982) worked at the Kernforschungszentrum Karlsruhe (KfK) on thermal hydraulics of molten core debris until 1982. He is now with Brown Boveri Corporation, Heidelberg, working on the thermal managing of sulfur-sodium battery systems. **Heinrich Werle** (Dr. Ing., University of Karlsruhe, 1970) is research physicist at KfK, where he is currently working on fast reactor safety.

TRANSIT TIME OF MIXED HIGH PRESSURE INJECTION WATER AND PRIMARY LOOP WATER IN PRESSURIZED WATER REACTOR COLD LEGS

Bill K.-H. Sun
Seung Oh
Paul H. Rothe

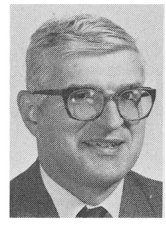


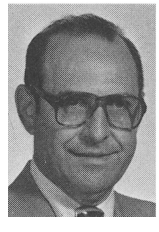
Bill K.-H. Sun (top) (PhD, mechanical engineering, University of California, Berkeley, 1973) has been involved in nuclear technology R&D since 1972. His technical interests are nuclear safety thermal hydraulics and computer-aided technology for reactor safety operations. He was a technical leader at the General Electric Company and a project manager and program manager at the Electric Power Research Institute (EPRI), responsible for applied testing and analysis. He is currently program manager at EPRI in charge of R&D activities on safety control systems in the Nuclear Power Division. **Seung Oh** (center) (PhD, nuclear engineering, University of California, Berkeley, 1982) is a staff scientist at Jaycor, Inc. His technical interest is in thermal hydraulics related to nuclear safety and power plant performance. He has been involved in the research of thermal mixing phenomena and the development of the real-time simulation code since 1982. **Paul H. Rothe** (bottom) (PhD, Stanford University) has worked on fluid mechanics, including multiphase flow, heat transfer, thermodynamics, rigid body dynamics, and structural vibrations. For two years he was an engineer at the Bell Telephone Laboratories. At Creare since 1973, he is currently vice-president and is responsible for the management of engineering R&D projects.

TECHNIQUES

TRITIATED WATER MEASUREMENTS WITH A $^{2}D(\gamma,n)^{1}H$ DETECTOR

Willard G. Winn
Norman P. Baumann





Willard G. Winn (top) [BS, physics, University of Virginia (UV), 1961); PhD, nuclear physics, Cornell University, 1968; ME, nuclear engineering, UV, 1974] is a staff physicist in the Analytical Development Division of Savannah River Laboratory (SRL). His primary areas of interest are nondestructive nuclear materials appraisal; α, β, and γ spectroscopy; and neutron activation analysis. **Norman P. Baumann** (BS Eng., physics, 1951, and PhD, nuclear physics, 1955, University of Kansas) is a research associate at the SRL. His primary area of interest has been experimental reactor physics with emphasis on neutron transport and neutron-induced reactors applied to nondestructive isotopic assays and to reactivity monitoring.