



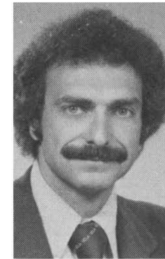
AUTHORS — FEBRUARY 1980

REACTORS

ACCIDENTAL CRITICALITY OF A FUSION-FISSION HYBRID BLANKET DESIGN

V. C. Badham (top right) [MS, engineer's degree, nuclear engineering, University of California, Los Angeles (UCLA), 1979] is working on a PhD at UCLA in nuclear engineering. His research is in the fields of reactor physics, transport theory, and reactor safety. **William E. Kastenberg** (top left) (BS, MS, engineering, UCLA; PhD, nuclear engineering, University of California, Berkeley) is currently professor of engineering and applied science at UCLA. He has taught courses in nuclear reactor theory, design, and safety; applied mathematics; thermodynamics and heat transfer; and energy technology and environmental effects. His research interests include nuclear reactor physics, nuclear reactor safety, and risk-benefit studies. In addition to liquid-metal fast breeder reactor safety, he has studied the potential safety problems of other nuclear energy systems, including laser and magnetically confined fusion, fusion-fission hybrids, and electro-nuclear breeders. **G. C. Pomraning** (bottom right) (PhD, nuclear engineering, Massachusetts Institute of Technology, 1962) is professor of engineering and applied science at UCLA. His research continues to be in the areas of reactor physics, transport theory, and applied mathematics. **David Okrent** (bottom left) (ME, Stevens Institute of Technology; MS, PhD, physics, Harvard University) is professor of engineering and applied science at UCLA. He worked at Argonne National Laboratory for 20 years, pioneering in fast reactor physics and safety. He is author of more than 100 papers dealing with reactor safety.

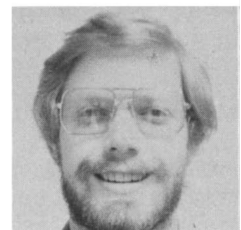
*V. C. Badham
W. E. Kastenberg
G. C. Pomraning
D. Okrent*



DETERMINISTIC CRITERIA VERSUS PROBABILISTIC ANALYSES: EXAMINING THE SINGLE FAILURE AND SEPARATION CRITERIA

W. W. Weaver (BS, marine engineering, U.S. Merchant Marine Academy, 1974; MS, nuclear engineering, Massachusetts Institute of Technology, 1975; MBA, George Washington University, 1979) has worked in the application of probabilistic analyses. He is currently interested in the cost/benefit area of system reliability at Babcock and Wilcox.

W. W. Weaver



PLENUM-2A, A PROGRAM FOR TRANSIENT ANALYSIS OF LIQUID-METAL FAST BREEDER REACTOR OUTLET PLENUMS

Juan J. Carbajo (top) (Ing. Ind., mechanical engineering, University of Madrid, 1970; MS, 1975, and PhD, 1976, nuclear engineering, University of Maryland) is assistant professor of nuclear engineering at the University of Illinois and a consultant to Argonne National Laboratory (ANL). His main interests are in containment analysis, reflood of light water reactors, two-phase flow, and fast breeder reactor transient analysis. **Paul A. Howard** (PhD, systems engineering, Marquette University, 1975) is a principal investigator at ANL. His current technical interests are experimental simulation of outlet plenum mixing and the utilization of microprocessors in an experimental facility.

*Juan J. Carbajo
Paul A. Howard*



ULTRASONIC INSPECTION OF LIQUID-METAL FAST BREEDER REACTOR STEAM GENERATOR DUPLEX TUBING

Kerry J. Longua (top) (BS, University of Wisconsin, 1958; MS, University of Idaho, 1964) is presently engaged on the development of various nondestructive testing techniques for the Experimental Breeder Reactor II (EBR-II). He has responsibility for the inspection of the EBR-II, as well as for failure analysis of any failed component. He has over 20 years of experience in the nuclear field, ranging from spent fuel evaluation to the manufacturing of fuel elements. **G. K. Whitham** (center) (BS, chemistry, Montana State University, 1943) spent five years on the Manhattan Project working on the electromagnetic separation of uranium at Oak Ridge, Tennessee. He joined Argonne National Laboratory in 1947, and was on the design and operating staff of EBR-I and -II and the Borax I through IV boiling water reactors. For ten years, he has been supervisor of the EBR-II Nondestruction Testing Group. **C. C. Allen** (bottom), a registered professional engineer in the State of California, has over 15 years of experience in nondestructive testing with primary emphasis in the nuclear power field. During the past seven years, he has been in charge of the Southwest Research Institute X-Ray Facility. He has done extensive work with collimation of ^{192}Ir sources to obtain code radiography on small-diameter piping and complex joint geometry. He was also involved in many phases of the EEI-sponsored program, Inservice Inspection Program for Nuclear Reactor Vessels. His key assignment in this program was that of responsible engineer in charge of support nondestructive testing at the Experimental Beryllium Oxide Reactor in Idaho Falls, Idaho.

*K. J. Longua
G. K. Whitham
C. C. Allen*

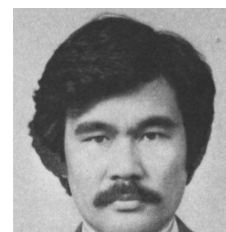


REACTOR SITING

HEAT TRANSFER OF A SPRAY DROPLET IN A NUCLEAR REACTOR CONTAINMENT

Mitsugu Tanaka (doctor of engineering, chemical engineering, University of Kyushu, Fukuoka, Japan, 1975) is a research engineer at the Japan Atomic Energy Research Institute. His current research interest is in the effectiveness of engineered safety features of light water reactors.

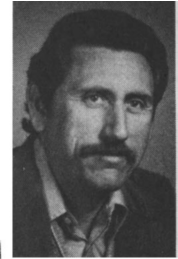
Mitsugu Tanaka



CONTAINMENT RESPONSE TO POSTULATED CORE MELTDOWN ACCIDENTS IN THE FAST FLUX TEST FACILITY

R. D. Gasser
W. T. Pratt

Ronald D. Gasser (top) (MS, nuclear engineering, University of California, Los Angeles, 1974) is a nuclear engineer at Brookhaven National Laboratory (BNL) and is currently involved in liquid-metal fast breeder reactor (LMFBR) and light water reactor post-accident heat removal and containment analyses. His interests lie in the heat removal problems associated with reactor safety. **William T. Pratt** (BSc, PhD, mechanical engineering, University of Strathclyde, Glasgow, 1974) has been involved in LMFBR safety analysis at BNL since 1976 and is currently task leader of the post-accident containment analysis task within the Safety Evaluation Group. His interests lie primarily in heat transfer and fluid flow aspects of nuclear reactor safety analysis.

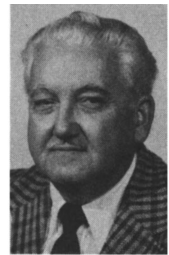


FUELS

EVAPORATIVE REMOVAL OF SODIUM FROM REACTOR COMPONENTS

F. H. Welch
O. P. Steele III

Frank H. Welch (top) (MA, physical chemistry, University of Kansas, 1948) is a member of the technical staff in the Energy Systems Group of Rockwell International Corporation. His technical specialty is sodium technology, with a current interest in the vacuum evaporation of sodium from liquid-metal fast breeder reactor components. **O. P. Steele III** (BS, electrical engineering, Kansas State University, 1949; BS, business management, University of Pittsburgh, 1958; MS, business management, California State University Northridge, 1973) has been involved in sodium technology for over 25 years and is currently manager of Sodium and Component Technology at the Energy Systems Group of Rockwell International Corporation.

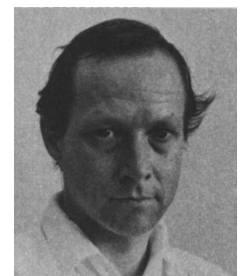


RADIOACTIVE WASTE

RADIONUCLIDE TRANSPORT THROUGH HETEROGENEOUS MEDIA

Jörg Hadermann

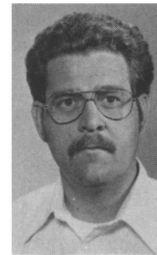
Jörg Hadermann (Dipl. Phys., 1964, and PhD, theoretical nuclear physics, 1968, University of Basle, Switzerland) is with the Swiss Federal Institute for Reactor Research at Würenlingen, Switzerland. Presently, he is involved in a project on nuclear waste disposal.



REDUCTION IN THE TOXICITY OF FISSION PRODUCT WASTES THROUGH TRANSMUTATION WITH DEUTERIUM-TRITIUM FUSION NEUTRONS

*T. A. Parish
J. W. Davidson*

Theodore A. Parish (top) (BS, mechanical engineering, Louisiana Polytechnic Institute, 1967; MS, nuclear engineering, Georgia Institute of Technology, 1968; PhD, nuclear engineering, University of Texas at Austin, 1973) is an assistant professor in the Department of Nuclear Engineering at Texas A&M University. He was previously employed by the University of Texas at Austin, where he performed neutronic investigations of transmutation and fusion-fission. His current interests include the technological problems of fusion and waste management. **J. Wiley Davidson** (PhD, nuclear engineering, University of Texas at Austin, 1979) is a research associate with the nuclear division of the Center for Energy Studies at the University of Texas at Austin. He is currently involved in the analysis of transmutation waste management system performance.

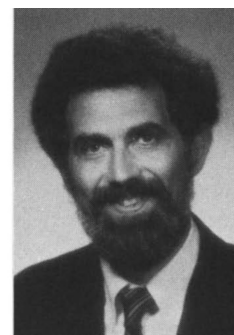


MATERIALS

AN IMPROVED EVALUATION MODEL FOR ZIRCALOY OXIDATION

Howard Ocken

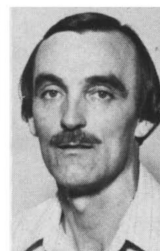
Howard Ocken (B, metallurgical engineering, New York University, 1960; DEng, metallurgy, Yale University, 1966) is project manager in the Nuclear Power Division of the Electric Power Research Institute. He is responsible for directing projects that address the response of core components under normal and accident conditions. Previously, he was with the Bettis Atomic Power Laboratory.



GAS GENERATION BY SELF-RADIOLYSIS OF TRITIATED WASTE MATERIALS

*W. E. Tadlock
G. C. Abell
R. H. Steinmeyer*

W. E. Tadlock (top) (MS, chemistry, Pittsburg State University, Pittsburg, Kansas, 1958) is a senior research chemist at Mound Facility (Monsanto Research Corporation). His primary interest is in tritium technology, with over ten years of direct experience. **G. C. Abell** (center) (PhD, physical chemistry, University of Notre Dame, 1971; postdoctoral research, Radiation Laboratory, Notre Dame, Indiana, 1973) is a senior research chemist at Mound Facility. His primary interests are with the design of packaging for radioactive waste and with metal hydride physics. **R. H. Steinmeyer** (bottom) (BS, chemistry, Ohio University, 1956) has 23 years of diversified experience with a variety of radioisotopes, primarily ^{238}Pu , ^{210}Po , and tritium. His primary interest in recent years has been in tritium research.



**NONDESTRUCTIVE FISSILE ISOTOPIC MEASUREMENT
TECHNIQUE FOR URANIUM-233-URANIUM-235 FUELS
USING PROMPT AND DELAYED FISSION NEUTRON
COUNTING**

*E. J. Allen
S. R. McNeany*

Edward J. Allen (top) (BS, nuclear engineering, University of Wisconsin, 1971; MS, nuclear engineering, University of Wisconsin, 1972) is a development engineer at Oak Ridge National Laboratory (ORNL). He has done work in nondestructive assay, nuclear safeguards, neutron flux measurement and computation, and nuclear heating. He is currently doing work in radiation shielding and criticality safety. **Steven R. McNeany** (BS, 1973, and ME, 1974, Rensselaer Polytechnic Institute) is a technical assistant to the director of the Engineering Technology Division at ORNL. His interests have been in the areas of nuclear safeguards, nondestructive assay, and nuclear criticality safety.

