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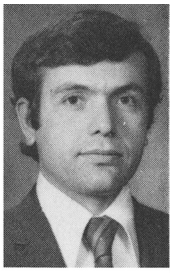
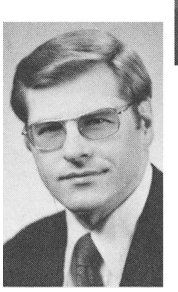
AUTHORS — AUGUST 1979

REACTORS

THE EFFECT OF LIQUID-METAL PROTECTION SCHEMES IN INERTIAL CONFINEMENT FUSION REACTORS

Halil I. Avci
Gerald L. Kulcinski

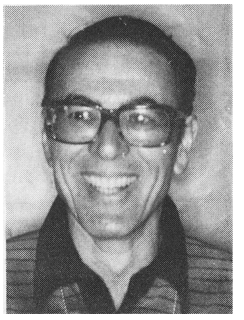




Halil I. Avci (top) (PhD, University of Wisconsin, 1978) is a research scientist in the Nuclear and Flow Systems Section of Battelle Columbus Laboratories. His current research interests include materials problems and radiation effects in fusion reactors and in nuclear fuel wastes. **Gerald L. Kulcinski** (PhD, nuclear engineering, Unversity of Wisconsin, 1965) is a professor of nuclear engineering at the University of Wisconsin. He has previously been engaged in fundamental radiation damage analysis at Battelle-Pacific Northwest Laboratories from 1965 to 1971. Since joining the faculty at Wisconsin in 1972, he has been involved in several magnetic and inertial confinement fusion reactor designs as well as continuing the analysis of radiation damage to metals.

CONVECTIVE HELIUM COOLING OF GRIDS IN CONTINUOUSLY OPERATED NEUTRAL BEAM INJECTORS

M. A. Hoffman



Myron A. Hoffman [ScD, Massachusetts Institute of Technology (MIT), 1955] taught advanced propulsion and space power generation at MIT in aeronautics and astronautics from about 1955 to 1968. He spent three years in the U.S. Air Force Research and Development Command (1956-1959) and two sabbatical leaves at the Italian Ionized Gas Laboratory in Frascati (1966-1967 and 1972-1973), where he worked on magnetohydrodynamic power generation and tokamak reactor conceptual design studies. He joined the Department of Mechanical Engineering at the University of California, Davis, in 1968, where his major research interests are presently in liquid jet flows, boiling heat transfer, and fusion reactor technology problems. He also consults for the Lawrence Livermore Laboratory on magnetic fusion reactor engineering studies.

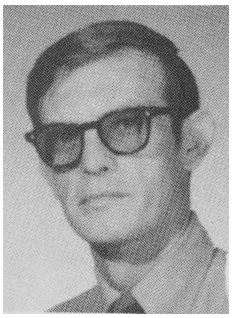
ACCIDENT PROGRESSION FOR A LOSS-OF-HEAT-SINK WITH SCRAM IN A LIQUID-METAL FAST BREEDER REACTOR

R. A. Bari
H. Ludewig
W. T. Pratt
Y. H. Sun

Robert A. Bari (far left) (AB, physics, Rutgers University, 1965; PhD, physics, Brandeis University, 1969) has been involved in liquid-metal fast breeder reactor (LMFBR) safety analysis at Brookhaven National Laboratory (BNL) since 1974 and is currently the group leader for advanced reactor safety evaluation in connection with BNL's Technical Assistance Program for the U.S. Nuclear Regulatory Commission. His interests include accident delineation and phenomenology and probabilistic risk analysis. **Hans Ludewig** (far right) (BSc, 1959, MSc, 1961, mechanical engineering, University of Natal, South Africa; PhD, engineering and applied science, California Institute of Technology, 1966) is a group leader in reactor physics at BNL. He is currently involved in reactor physics studies of fast and heavy water reactors. His interests include reactor physics and thermal-hydraulic behavior of reactor systems. **William T. Pratt** (second from left) (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. **Yang-ho Sun** (second from right) (BS, 1968, MS, 1971, National Tsing-Hua University; PhD, nuclear engineering, University of California, Los Angeles, 1976) has been working at BNL since 1976. His interests primarily include system interactions and reliability analysis, fuel pin failure dynamics, and nuclear reactor safety analysis.

PERFORMANCE PARAMETERS FOR FUSION-FISSION POWER SYSTEMS

D. J. Bender

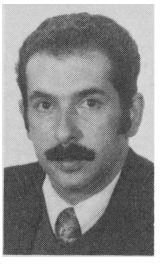


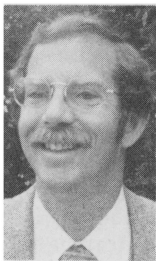
D. J. Bender (PhD, mechanical engineering, Stanford University, 1975) was a member of the Fusion Reactor Studies Group at Lawrence Livermore Laboratory (LLL) from 1974 until 1978 and is now with General Electric, Valley Forge Space Center, Philadelphia, Pennsylvania. His work at LLL involved conceptual design, system analysis and economic analysis of fusion and fusion-hybrid reactors.

REACTOR SITING

EFFECT OF FLUID-TO-STRUCTURE HEAT TRANSFER ON THE STRUCTURAL DAMAGE POTENTIAL TO A LIQUID-METAL FAST BREEDER REACTOR

S. J. Hakim
P. B. Abramson





Shafik J. Hakim (top) (MA, mathematics, University of South Dakota; MSE, nuclear engineering, PhD, physics, The University of Michigan, Ann Arbor) has been a staff member since 1975 in the Reactor Analysis and Safety Division at Argonne National Laboratory (ANL). His work there has concentrated on the development of the computer code TRANSIT for analysis of the transition phase of a loss-of-flow accident in a liquid-metal fast breeder reactor as well as related heat transfer and hydrodynamic phenomena. **Paul B. Abramson** (BS, engineering mechanics, Lehigh University, 1961; PhD, physics, University of Colorado, 1968) is currently group leader for reactor accident modeling in the Applied Physics Division at ANL. From

1962 to 1965, he was at Atomics International, and from 1968 to 1974, he was chairman of physics at Colorado's Metropolitan State College in Denver (where he was also elected alderman and later mayor of the city of Wheat Ridge, Colorado, as an extracurricular activity). His current interests are in fast reactor accident modeling, with specific interest in numerical compressible hydrodynamics and basic phenomenology in heat transfer.

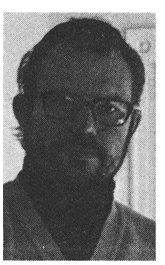
AN EVALUATION OF THE THERMAL-HYDRAULIC AND FUEL ROD THERMAL AND MECHANICAL DEFORMATION BEHAVIOR DURING THE FIRST POWER BURST FACILITY NUCLEAR BLOWDOWN TESTS

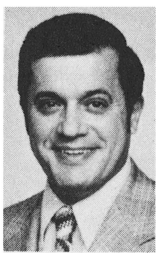
Philip E. MacDonald
James M. Broughton
Jay W. Spore

P. E. MacDonald (center) (BS, science engineering, University of Michigan, 1966) is the manager of the Light Water Reactor Fuels Research Division in the EG&G Idaho, Inc., Water Reactor Research Directorate. From 1966 until 1970, he was a fuel rod behavior analyst with Westinghouse Electric Company. He was supervisor of fuel rod design for Nuclear Fuels Services from 1970 until 1973. Since joining the Idaho National Engineering Laboratory (INEL) in 1973, as supervisor of the Fuel Behavior Requirements Section, he has served as manager of the Program Development and Evaluation Branch and manager of the Experiment Specification and Analysis Branch. **J. M. Broughton** (right) (MS, mechanical engineering, Colorado State University, 1972) is a section supervisor in the Experiment Specification and Analysis Branch of EG&G Idaho, Inc. He has been employed at INEL since 1972, where he has participated in the Power Burst Facility (PBF) fuel rod behavior experimental program and also the development of fuel rod behavior models. His primary interests are concerned with the system thermal-hydraulic and fuel rod behavior related to a postulated pressurized water reactor loss-of-coolant accident (LOCA). Currently, he is responsible for the experiment specification and analysis of the PBF LOCA and inlet flow blockage experimental programs. **J. W. Spore** (left) (MS, mechanical engineering, University of California, Berkeley, 1976) is a senior engineer in the Thermal Analysis Branch of EG&G Idaho, Inc. He was previously employed by the Nuclear Energy Division of the General Electric Company, where he participated in the development of advanced thermal-hydraulic methods for the analysis of nuclear reactor transients. His current interests include nonequilibrium, nonhomogeneous two-phase flow models, transient critical heat flux (CHF) prediction, and post-CHF heat transfer modeling.

THE PHYSICAL STATE OF POST-LOSS-OF-COOLANT ACCIDENT CONTAINMENT ATMOSPHERES

Kazys K. Almenas
Joseph M. Marchello



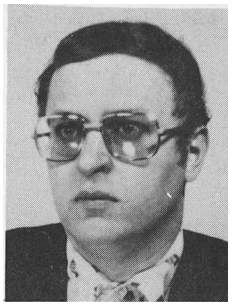


K. K. Almenas (top) (PhD, University of Warsaw, 1968) is an associate professor at the University of Maryland. His technical interests include neutral particle transport and light water reactor safety research. **J. M. Marchello** (PhD, chemical engineering, Carnegie-Mellon University, 1959) is chancellor of the University of Missouri-Rolla. His interests are in heat and mass transfer and air pollution control.

FUEL CYCLES

OPTIMAL LINEAR COMBINATIONS OF ACCOUNTING DATA FOR THE DETECTION OF NONCONSTANT LOSSES

Hans H. Frick

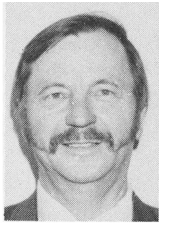


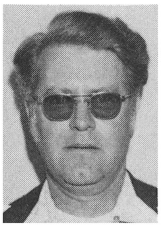
Hans H. Frick studied mathematics at the Universities of Frankfurt and Munich in the Federal Republic of Germany, and was thereafter associated with the Nuclear Research Center at Karlsruhe from 1973 to 1978. He completed his thesis in 1976 at the University of Karlsruhe. In 1979, he returned to the University of Munich.

FUELS

FABRICATION OF GRID-SPACED BUNDLE FOR THE F-5 (X317) IRRADIATION EXPERIMENT

J. R. Lindgren
P. W. Flynn
L. C. Foster

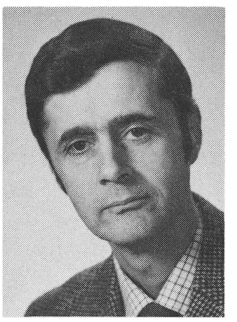




J. R. Lindgren (top) (BSc, metallurgical engineering, Michigan Technological University, 1952) joined General Atomic Company (GA) in 1957. His work at GA has been on fuels, materials, and fabrication development and irradiation testing for gas-cooled reactors and thermionic devices. Prior to joining GA, he spent three years at Argonne National Laboratory on development of fabrication methods and fabrication of the fuel, primarily for the experimental boiling water reactor. He is currently manager of the gas-cooled fast breeder reactor (GCFR) Fabrication Development Branch. **P. W. Flynn** (center) (BS, engineering, 1955; MS, metallurgy, 1961, University of California, Berkeley) joined GA in 1969 and has been involved in irradiation effects on steel, fast reactor fuel rod testing, and fuel assembly fabrication development for the GCFR. **L. C. Foster** (bottom) (Tool and Die Journeyman, 1949, Dow Chemical Company) joined GA in 1959. He has served as a technical specialist performing research and development on materials for a variety of applications, and fuels and materials for gas-cooled thermal and breeder reactors and fabrication of components for irradiation and laboratory tests. He is currently supervising a laboratory performing fabrication development for GCFR core assemblies.

ELESIM: A COMPUTER CODE FOR PREDICTING THE PERFORMANCE OF NUCLEAR FUEL ELEMENTS

M. J. F. Notley



Michael J. Notley (BA, metallurgy, Cambridge University, 1954) worked for the U.K. Atomic Energy Authority at Harwell before joining the Chalk River Nuclear Laboratories in 1960. Since then, he has been involved in the development of CANDU nuclear fuel, particularly in the experimental determination of in-reactor performance and in modeling such experience in the form of fuel codes.