



## AUTHORS — DECEMBER 1976

### REACTORS

#### EXPERIMENTAL STUDY ON FAST-NEUTRON STREAMING THROUGH A GRID-PLATE SHIELD OF A LIQUID-METAL FAST BREEDER REACTOR

*Yoshiaki Oka  
Hiroaki Wakabayashi  
Shigehiro An  
Ikunori Suzuki*

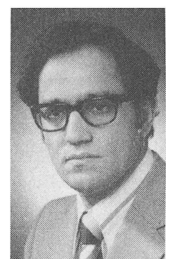
Yoshiaki Oka (top left) (Dr. Eng., University of Tokyo, 1974) is a member of the staff of the Nuclear Engineering Research Laboratory at the University of Tokyo. His interests include reactor shielding and reactor noise. Hiroaki Wakabayashi (top right) (Dr. Eng., University of Tokyo, 1967) is an associate professor in the Nuclear Engineering Research Laboratory at the University of Tokyo. His main interests include dynamic characteristics of fast pulse reactors. He is engaged in studies of the pulsed operation of YAYOI. Shigehiro An (bottom left) (Dr. Eng., University of Tokyo, 1963) is a professor in the Nuclear Engineering Research Laboratory at the University of Tokyo. His interests include fast reactor safety and core physics design. Ikunori Suzuki (bottom right) (MS, nuclear engineering, Tokyo Institute of Technology, 1967) is employed by Kawasaki Heavy Industries and is a member of the Fast Breeder Reactor Development Project of the Power Reactor and Nuclear Fuel Development Corporation. He is responsible for the fast breeder reactor shielding design.



#### MOLTEN FUEL-COOLANT INTERACTION DURING HYPOTHETICAL ACCIDENTS IN LIGHT WATER REACTORS

*Victor Teschendorff  
Adly Barsoum Wahba*

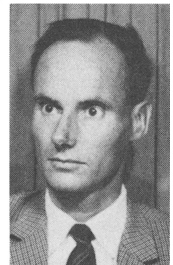
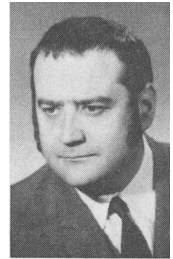
Victor Teschendorff (top) (Diplom-Ingenieur, mechanical engineering, Technische Hochschule Aachen, Germany, 1973) is an analyst in the Engineering Department of the Laboratorium für Reaktorregelung und Anlagensicherung, Technische Universität München, Federal Republic of Germany. His main interests are two-phase flow problems in reactor safety analysis. Adly Barsoum Wahba (Dr. Ing., mechanical engineering, Technische Universität München, Germany, 1964) is manager of the low-pressure emergency core cooling group of the Laboratorium für Reaktorregelung und Anlagensicherung, Technische Universität München. He was previously responsible for safety analysis of sodium-cooled fast breeder reactors in the same laboratory. His experience includes heat and mass transfer studies, visualization of pressure waves due to the spark discharge in water, and sodium-fuel interaction studies.



**FAST REACTOR TRANSFER FUNCTIONS WITH SPECIAL REFERENCE TO THE NONLINEARITIES AND THE SPATIAL DEPENDENCE OF THE HEAT TRANSFER PROCESS**

Leonardo A. D. Caldarola (top) (PhD, electrical engineering, Polytechnique of Torino, Italy, and recognized by the "Kultusministerium Baden Württemberg," Germany) has since 1970 been working at the Institut für Angewandte Systemtechnik und Reaktorphysik in Karlsruhe on safety and reliability problems. Since 1973 he has been principal scientific officer of the Commission of the European Community and has been teaching reliability theory at the University of Karlsruhe. Paola Maria Ferranti (center) (Dr., mathematics, Roma University) is a member of the Euratom scientific staff. Until 1973 she worked on computer programming at the Institut für Neutronenphysik und Reaktortechnik, Kernforschungszentrum Karlsruhe; at present she is delegated at the Comitato Nazionale Energia Nucleare in Bologna, Italy. Fritz Mitzel (bottom) (PhD, Technical University Karlsruhe, 1967) is a staff member at the Institute for Neutron Physics and Reactor Technology of Kernforschungszentrum Karlsruhe. He has previously worked on various problems in the field of reactor physics, such as the measurement of nuclear data, instrumentation, nuclear kinetics, and reactor dynamics, and is presently engaged in investigations concerning the measurement and the analysis of reactor power noise. His interests include reactor control and diagnosis.

*L. Caldarola  
P. Ferranti  
F. Mitzel*

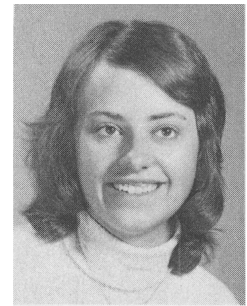


**REACTOR SITING**

**RECENT STATE LAWS REGULATING POWER FACILITY SITING**

Victoria A. Evans (BS, natural resources, University of Michigan, 1972; MS, resource policy and administration, University of Michigan, 1976) was an environmental planner with Gilbert/Commonwealth in Jackson, Michigan, when her paper was prepared. She is now with the Office of Environmental Project Review in the U.S. Department of the Interior.

*Victoria A. Evans*



**CIVIL DEFENSE IMPLICATIONS OF THE U.S. NUCLEAR POWER INDUSTRY DURING A LARGE NUCLEAR WAR IN THE YEAR 2000**

Conrad V. Chester (left) (PhD, chemical engineering, University of Tennessee) is head of the Emergency Technology Section, Health Physics Division, Oak Ridge National Laboratory (ORNL). He has been concerned with a number of problems in the general field of weapons effects and civil defense. Rowena O. Chester (PhD, physics, University of Tennessee) is a research staff member of the Health Physics Division of ORNL. She has been concerned with the analysis of severe reactor accidents.

*Conrad V. Chester  
Rowena O. Chester*

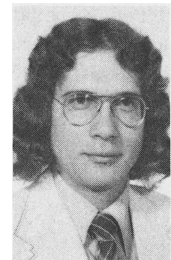


**REACTIVITY MEASUREMENTS UNDER CONDITIONS TYPICAL TO FUEL ELEMENT DISSOLUTION***S. R. Bierman*

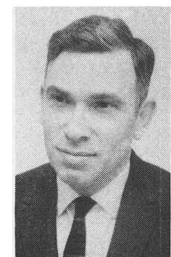
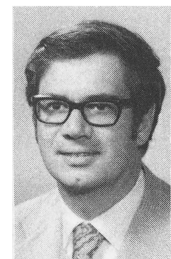
S. R. Bierman (BS, chemical engineering, Texas Technological University; MS, nuclear engineering, University of Washington) has been involved both in the chemical processing industry and in criticality research and analysis. He is currently a senior research engineer at the Critical Mass Laboratory in Richland, Washington, where he has been active in both the generation of basic experimental criticality data and the utilization of these data in performing criticality analyses of production plant systems.

**FUELS****THE EFFECT OF VARIABLE THERMAL CONDUCTIVITY IN THERMAL-HYDRAULIC CALCULATIONS***David A. Rehbein  
Roger W. Carlson*

David A. Rehbein (top) (BChE, Georgia Institute of Technology, 1973; MSNE, Georgia Institute of Technology, 1974) is currently employed with the Babcock and Wilcox Company in the Nuclear Service Department. His current responsibilities involve the core physics and operational testing that is required to check the performance of a nuclear plant during initial startup. Roger W. Carlson (BS, mechanical engineering, The Pennsylvania State University, 1962; PhD, nuclear engineering, Massachusetts Institute of Technology, 1966) is currently an assistant professor at Georgia Institute of Technology, where he teaches courses in nuclear engineering and pursues research in the area of computer modeling of all aspects of nuclear engineering. His current interests include the modeling of fuel performance in both thermal and fast reactors and the modeling of the consequences of transients in reactor systems.

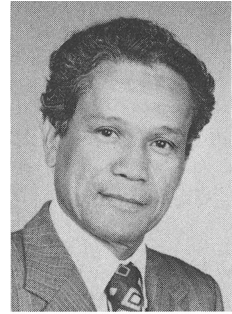
**EFFECT OF PELLET CRACKING ON LIGHT WATER REACTOR FUEL TEMPERATURES***P. E. MacDonald  
J. Weisman*

Philip E. MacDonald (top) (BS, University of Michigan, 1966) is manager of the Experiment Specification and Analysis Branch of the Aerojet Nuclear Company. The Experiment Specification and Analysis Branch is responsible for analyzing and publishing the results of U.S. Nuclear Regulatory Commission-sponsored tests being conducted in the Semiscale, PBF, and Halden facilities to verify light water reactor (LWR) safety analysis computer models. MacDonald's particular interest is in the area of LWR fuel behavior during off-normal or accident situations. Joel Weisman (PhD, University of Pittsburgh) is professor of nuclear engineering at the University of Cincinnati. Prior to joining the University in 1968, he spent over 18 years in industry. His last industrial position was that of manager of thermal and hydraulic analysis for the Pressurized Water Reactor Division of Westinghouse Nuclear Energy Systems.



**ALLOY 800 FOR LIQUID-METAL FAST BREEDER REACTOR STEAM GENERATORS***M. Julien*

Marcel Julien (Conservatoire National Des Arts Et Metiers, France, 1956) is a metallurgist engineer with Fives-Cail Babcock, where he is in charge of the Metallurgical Research Service.

**UPDATED MEASURE OF RADIATION DAMAGE EXPOSURE***K. Shure*

K. Shure (AB, physics, Brooklyn College, 1945; PhD, nuclear physics, Massachusetts Institute of Technology, 1951) is a consultant in radiation analysis at Bettis Atomic Power Laboratory. His current technical interests include measures of neutron exposure to be associated with material property changes, fission product decay heat, and computational techniques for reactor shield design.

