



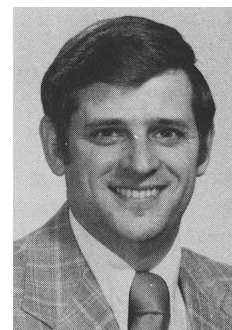
AUTHORS — OCTOBER 1979

REACTORS

ANALYTIC PREDICTION OF THERMAL PROFILE DEVELOPMENT AND INVERSION FOR USE IN IN-PILE EXPERIMENTATION

David P. Weber

David P. Weber (BS, mathematics, Northern Illinois University, 1968; MS, PhD, nuclear engineering, University of Illinois, 1970, 1973) is involved in the analysis of hypothetical core disruptive accidents in fast breeder reactors. He is active in the development and verification of large-scale thermal-hydraulic-neutronic computer codes for multicomponent, multidimensional systems. He is presently the manager of the Accident Analysis Section in the Reactor Analysis and Safety Division at Argonne National Laboratory.



DECAY SPECTRA OF FISSION PRODUCTS FROM URANIUM-235 THERMAL FISSION: COMPARISON OF CALCULATIONS WITH EXPERIMENTS

*M. G. Stamatelatos
T. R. England*

Michael G. Stamatelatos (top) (BS, 1964, MS, 1965, Doctor Eng. Sci., 1970, nuclear science and engineering, Columbia University) is the director of nuclear programs at Jaycor, Del Mar, California, a consultant to the Los Alamos Scientific Laboratory (LASL), and a member of the ANS 5.1 Decay Heat Standards Committee. His areas of current technical interest include radiation source terms and transport, nuclear data, nuclear decay heat, radiation shielding, reactor analysis and safety, nuclear safeguards, and radioactive waste management. **Talmadge R. England** (BS, physics, LMU, 1956; MS, physics, University of Pittsburgh, 1962; PhD, nuclear engineering, University of Wisconsin, 1969) is a staff member in the Theoretical Division of LASL, a member of the U.S. Department of Energy Advisory Panel for Reference Nuclear Data, chairman of the Fission Product Yields Subcommittee of the Cross Section Evaluation Working Group, and secretary of the ANS 5.1 Decay Heat Standards Committee. His current technical interests include basic nuclear, actinide, and fission product data for ENDF/B-V and -VI, and the testing and use of these data for waste management, reactor safety, and nuclear fuel cycles.



COMPATIBILITY CONSIDERATION FOR ZERO MOMENT TOKAMAK TOROIDAL FIELD COILS

Samuel L. Gralnick (left) [BE (CE), City College of New York, 1966; ME, City College of New York, 1968; PhD, Columbia University, 1972] has been an active participant in fusion research for the past ten years and has worked on many problems of significance to the controlled fusion effort. He joined the staff of the Grumman Aerospace Corporation in August 1978 and is responsible for plasma physics and plasma engineering activities. **Irving U. Ojalvo** (second from left) (BME, City College of New York, 1956; SM, mechanical engineering, Massachusetts Institute of Technology, 1957; ScD, mechanical engineering, New York University, 1962) was in charge of the tokamak fusion test reactor vacuum vessel stress analysis at Grumman until 1978. He is currently responsible for Grumman's preliminary structural analyses for a variety of fusion devices. **Irving J. Zatz** (right) (BS, civil engineering, Cornell University, 1975; ME, structural engineering, Cornell University, 1976) is currently an engineer of structural mechanics and analysis with Grumman. His special interests include finite element technology, thermostructural analysis, fracture mechanics, and structural fatigue. He has worked on a number of structural problems for fusion device components. **Theodore Balderes** (second from right) (BS, mechanical engineering, Cooper Union, 1964; MS, engineering mechanics, Columbia University, 1965; PhD, applied mechanics, Polytechnic Institute of New York, 1972) is currently an engineering specialist with Grumman. His special interests include finite element technology, shell analysis, and nonlinear effects in structures. He has served as a consultant to the Franklin Institute.

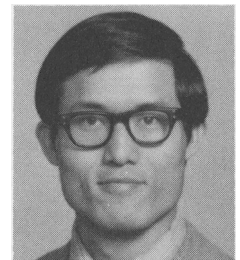
*S. L. Gralnick
I. U. Ojalvo
I. J. Zatz
T. Balderes*



DYNAMIC ANALYSIS OF A FUSION SYSTEM USING THE SYSTEM TRANSFER FUNCTION

S. Bian (PhD, nuclear engineering, University of Washington, 1973) is a technical staff member in the Nuclear Power Generation Division of Babcock & Wilcox Company. His interests have been in fission and fusion reactor dynamics. Currently, he is involved in multidimensional light water reactor transient code development.

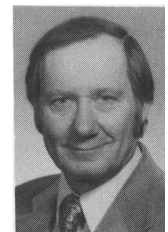
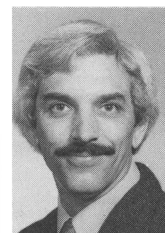
S. Bian



TREAT TEST H6—A 50 cent/s TRANSIENT OVERPOWER ACCIDENT SIMULATION

Richard J. Page (top) (BS, aeronautical engineering, University of Bath, England, 1965; MS, mechanical engineering, University of Washington, 1971; PhD, mechanical engineering, University of Washington, 1975) is a lead experimenter in the Reactor Analysis and Safety Division at Argonne National Laboratory (ANL). He is currently involved in conducting in-pile experiments in support of liquid-metal fast breeder reactor safety analyses. **Charles L. Fink** (center) (PhD, nuclear physics, University of Pittsburgh, 1971) joined ANL in 1974. He has been active in improving the diagnostic capability of the hodoscope, and in analyzing fuel motion data. **Alan B. Rothman** (bottom) (BS, chemistry, University of Pittsburgh, 1949; MS, chemistry, Carnegie Institute of Technology, 1952; PhD, physical chemistry, Carnegie Institute of Technology, 1954) is currently TREAT Program Experiments Section manager in

*Richard J. Page
Charles L. Fink
Alan B. Rothman
Robert K. Lo
Lewis E. Robinson
Paul H. Froehle*



REACTOR SITING

the Reactor Analysis and Safety Division at ANL. His special interests include thermodynamics, reactor physics, and nuclear engineering. **Robert K. Lo** (top) (BS, aeronautical engineering, National Central University, China, 1944; MS, mechanical engineering, Stanford University, 1951; PhD, Illinois Institute of Technology, 1957) has been with ANL as an experimental analyst since 1966. **Lewis E. Robinson** (center) (BS, physics, University of Iowa, 1949; graduate study, University of Wisconsin and Marquette) is an engineer responsible for ANL's sodium loop test vehicles in TREAT. **Paul H. Froehle** (bottom) (BS, physics, St. Procopius College, 1969) joined ANL as a scientific assistant for study of magnetic fields in actinides at low temperature. In 1973, he went to the Reactor Analysis and Safety Division of ANL as a computer programmer.

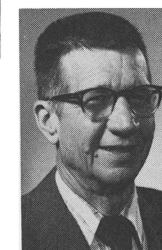
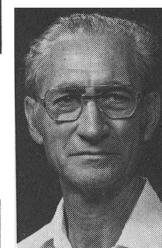


FUEL CYCLES

TECHNICAL CONSIDERATION OF THE USE OF NUCLEAR FUEL SPIKANTS FOR PROLIFERATION DETERRENCE

J. E. Selle (top right) (BS, 1955, MS, 1956, University of Wisconsin; PhD, 1967, University of Cincinnati, all in metallurgical engineering) has worked more than 17 years with plutonium fuels for radioisotopic heat sources and reactor applications. He is currently working on structural ceramics for high-temperature gas-cooled reactor application in the Metals and Ceramics Division of Oak Ridge National Laboratory (ORNL). **Peter Angelini** (top left) (BS, physics, West Virginia University, 1967; MS, physics, University of Tennessee, 1974) is a physicist in the Metals and Ceramics Division at ORNL, with special interests in fuel refabrication and nuclear waste forms development. **Robert H. Rainey** (center right) (BS, Memphis State University, 1941) is a chemist at the Institute for Energy Analysis at Oak Ridge Associated Universities. His background and experience include ongoing studies in chemistry and mathematics through the University of Tennessee Extension School; 29 years with ORNL working on nuclear fuel reprocessing development; and 3 years as a reviewer of nuclear reprocessing plants safety analysis reports for the U.S. Nuclear Regulatory Commission. His current work involves preparation of background materials on reprocessing of nuclear fuels for the International Fuel Cycle Evaluation Study. **J. I. Federer** (bottom left) (BS, metallurgical engineering, University of Kentucky, 1954; MS, metallurgical engineering, University of Tennessee, 1967) has professional experience in diffusion in body-centered cubic metals and in oxide compounds; development of chemical vapor deposition techniques for refractory metals, alloys, and compounds; synthesis of mixed carbide fuels; and studies of the effects of residual oil combustion products on refractories and refractory insulations. **A. R. Olsen** (bottom right) (BS, metallurgical engineering, Colorado School of Mines) is a development engineer in the Metals and Ceramics Division at ORNL, currently involved in alternative fuel cycle evaluations. His interests include all portions of the fuel cycle including design, performance, and economics, in addition to fabrication process development.

*J. E. Selle
P. Angelini
R. H. Rainey
J. I. Federer
A. R. Olsen*



THE EXTERNAL GELATION OF THORIUM PROCESS FOR PREPARATION OF ThO_2 AND $(\text{Th,U})\text{O}_2$ FUEL KERNELS

H. D. Ringel
E. Zimmer

Helmut D. Ringel (top) (Dr. Ing., TH-Aachen, 1975) joined the Institut für Chemische Technologie of Kernforschungsanlage (KFA) Jülich in 1972 and was involved in particle preparation for refabrication of high-temperature reactor (HTR) fuel. He is currently group leader for off-gas treatment and head-end reprocessing. **Erich Zimmer** (Dr. rer. nat., chemistry, University of Mainz, 1965) is a section head at the Institut für Chemische Technologie of KFA Jülich. He is involved in reprocessing, refabrication, and waste treatment development in the fuel cycle of HTRs.



RADIOACTIVE WASTE

POWER PRODUCTION AND ACTINIDE ELIMINATION BY FAST REACTOR RECYCLE

D. J. Murphy, Jr.
W. M. Farr
B. D. Ganapol

Daniel J. Murphy, Jr. (top) (BS, engineering and mathematics, U.S. Naval Academy, 1966; MS, nuclear engineering, University of Arizona, 1973; PhD, nuclear engineering, University of Arizona, 1978) is a technical staff member in the Nuclear Fuel Cycle Systems Safety Division of Sandia Laboratories. His work is in the areas of analysis of undesirable light water reactor (LWR) systems interactions and in the development of regulatory inspection techniques for commercial nuclear reactor plants. Presently, his technical interests include analysis of the effects of human factors on LWR safety, microprocessor development and implementation, and the effects of technological interactions on biological systems. **W. Morris Farr** (center) (PhD, nuclear science, University of Michigan) has been a member of the Nuclear Engineering Department at the University of Arizona since 1969. His research interests have included reactor physics and plasma physics as applied to controlled fusion. **Barry D. Ganapol** (bottom) (BS, mechanical engineering, University of California, Berkeley; MS, Columbia University; PhD, nuclear engineering science, University of California, Berkeley, 1971) worked at EIR in Switzerland and at Saclay in France for three years before joining the Reactor Analysis and Safety Division at Argonne National Laboratory. Since 1976, he has been a professor in the Nuclear Engineering Department at the University of Arizona.

