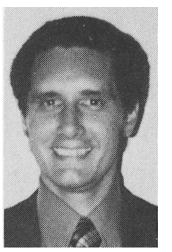
nuclear technology®

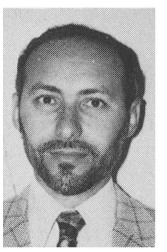
AUTHORS — JANUARY 1978

REACTORS

PROBABILISTIC ANALYSIS OF THE INTERFACING SYSTEM LOSS-OF-COOLANT ACCIDENT AND IMPLICATIONS ON DESIGN DECISIONS

F. L. Leverenz, Jr.
A. A. Garcia
J. E. Kelly





Fred L. Leverenz, Jr. (top) (BSEE, University of Cincinnati, 1966) has been employed at Science Applications, Inc. (SAI) since 1974. Prior to this, he was a member of the *Reactor Safety Study* (RSS) staff. His main area of interest is the development of safety and reliability analysis methodology. Abel A. Garcia (center) (BS, engineering, United States Naval Academy, 1963; PE, nuclear engineering, State of California) is deputy manager of the Reliability and Safety Division of SAI. He is involved in reliability safety risk and analysis for power reactors and fuel cycle facilities. His experience includes five years at the Lawrence Livermore Laboratory Super Kukla Prompt Burst Facility and participation in the RSS. John E. Kelly (bottom) (BS, physics, Seattle University, 1964) has been an employee of SAI since leaving the RSS staff in 1974. His area of interest is the application of safety (probability) techniques to the analysis of nuclear power plants.

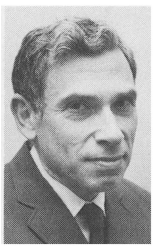
DETERMINATION OF THE NET FREE CONTAINMENT VOLUME AT THE TROJAN NUCLEAR PLANT USING AN EXPERIMENTAL-ANALYTICAL TECHNIQUE

George R. Fegan
Daniel I. Herborn
Steven M. Lippincott

George R. Fegan (center) (PhD, mathematical statistics, Oregon State University, 1973) is an analyst for the Corporate Planning Department at Portland General Electric Company (PGE). His current interest is in stochastic processes with applications in reliability and availability. Daniel I. Herborn (left) (MS, nuclear engineering, University of Missouri, 1967) is a supervising nuclear engineer in the Generation Licensing and Analysis Branch at PGE. His current interest is in computer code analysis of nuclear power reactor systems. Steven M. Lippincott (right) (BS, nuclear engineering, Oregon State University, 1972) is a nuclear engineer in the Generation Licensing and Analysis Branch at PGE. His current interests are in mechanical and thermodynamic applications in pressurized water reactor system testing and analysis.

THE USE OF THE METHOD OF CHARACTERISTICS FOR EXAMINATION OF TWO-PHASE FLOW BEHAVIOR

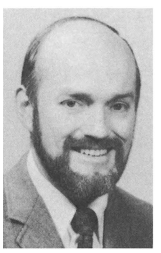
A. Tentner
J. Weisman



Adrian M. Tentner (top) (PhD, nuclear engineering, University of Cincinnati, 1977) is a nuclear engineer at Argonne National Laboratory. He is currently engaged in the analysis of post-accident fuel-coolant interactions in the liquid-metal fast breeder reactor (LMFBR). His interests are in transient thermal hydraulics, two-phase flow, and numerical problems arising in nuclear reactor safety analysis. Joel Weisman (MS, chemical engineering, Columbia University, 1949; PhD, operations research, University of Pittsburgh, 1968) is a professor of nuclear engineering at the University of Cincinnati. Prior to joining the University, he spent 18 years in industry, where his last position was that of manager of Thermal and Hydraulic Analysis for Westinghouse's Pressurized Water Reactor Division.

TOKAMAK FUSION POWER REACTORS

Weston M. Stacey, Jr.
Mohamed A. Abdou

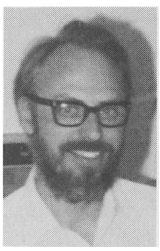


Weston M. Stacey, Jr. (top) (BS, physics, 1959; MS, nuclear science, Georgia Institute of Technology, 1962; PhD, nuclear engineering, Massachusetts Institute of Technology, 1966) was director of the Fusion Power Program at Argonne National Laboratory (ANL) until August 1977 and presently is a Callaway Professor of Nuclear Engineering at Georgia Institute of Technology. Mohamed A. Abdou (PhD, nuclear engineering, University of Wisconsin, 1973) is in the Applied Physics Division at ANL and is the manager of the fusion reactor systems studies. His current interests are focused on the technology problems in fusion energy systems, particularly nuclear analysis, blanket engineering, economics, and fusion reactor design and modeling.

FUELS

DEALING WITH UNCERTAINTY IN FUEL ROD MODELING

Sidney Oldberg, Jr.
Ronald A. Christensen



Sidney Oldberg (top) (BME, mechanical engineering, Cornell University, 1962; MSE, mechanical engineering, University of Michigan, 1963) is a project engineer in the Nuclear Power Division of the Electric Power Research Institute. His current interests include reliability problems of the light water reactor core and pressure boundary. Ronald A. Christensen (BS, electrical engineering, Iowa State University, 1958; MS, mechanical engineering, California Institute of Technology, 1959; JD, Harvard University, 1962; PhD, physics, University of California at Berkeley, 1969) is president of Entropy Limited and adjunct associate professor of biomedical engineering at Carnegie-Mellon University. His primary interest is in the development and application of information theory based computer modeling techniques for complex nonlinear systems.

FAILED FUEL PIN PERFORMANCE IN FAST METAL-COOLED REACTORS

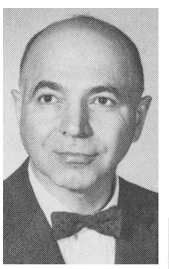
H. Plitz

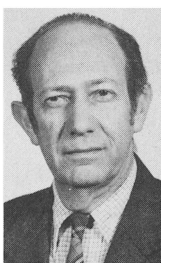
Helmuth Plitz (Diploma Engineer, Technical University Munich, 1964) was with AEG from 1964 to 1973 (working on design, irradiation, development of fuel elements for boiling water reactors, the superheated steam reactor, and steam and gas-cooled breeders, with 18 months delegated to the HBWR project), with Kraftwerk Union from 1973 to 1975 [delegated to the Gesellschaft für Kernforschung (GfK) Fast Breeder Project, Carbide Fuel Development] and is now a staff member of the Fast Breeder Project of GfK. His current interests are concentrated on the incidental behavior of fuel elements.

RADIOISOTOPES

CATALYTIC TRAPPING OF METHYLRADIOIODIDE BY BEDS OF IMPREGNATED CHARCOAL

Victor R. Deitz
Leonard A. Jonas



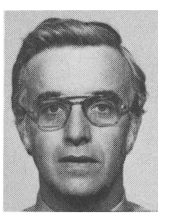


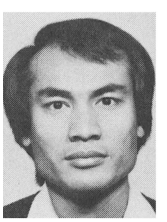
Victor R. Deitz (top) (PhD, chemistry, Johns Hopkins University, 1932) was a Gugenheim Fellow at the Imperial College of Science and Technology in London from 1957 to 1958. His current interests are in the fundamental structure and micromechanics of carbon fibers and in new catalysts using charcoal as the support. Leonard A. Jonas (PhD, physical chemistry, University of Maryland, 1970) has been associated for many years with research on methods and materials for the removal of trace contaminants from the air. His research interests encompass aerosol filtration theory as well as equilibrium and kinetic studies on gas adsorption. Since 1974 he has been chief of the Pollution Abatement (now Air Purification) Section of research at the Army's Chemical Systems Laboratory in Maryland.

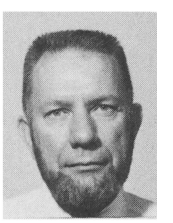
SHIELDING

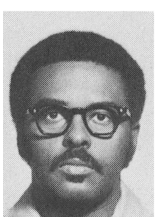
MONTE CARLO ANALYSIS OF THE EFFECTS OF A BLANKET-SHIELD PENETRATION ON THE PERFORMANCE OF A TOKAMAK FUSION REACTOR

R. T. Santoro
J. S. Tang
R. G. Alsmiller, Jr.
J. M. Barnes









R. T. Santoro (top right) (MS, University of Tennessee, 1967) is a research staff member in the Neutron Physics Division at Oak Ridge National Laboratory (ORNL). His work has been in the areas of medium-energy neutron and proton spectroscopy, high-energy radiation shielding for accelerators and manned space vehicles, and cancer radiotherapy studies. His current interests focus on magnetic fusion energy reactor design, particularly on neutronics problems. J. S. Tang (top left) (PhD, University of Tennessee, 1976) is a computing specialist in the Computer Sciences Division at ORNL. His current areas of interest are radiation transport and nuclear criticality safety studies. R. G. Alsmiller, Jr. (bottom right) (PhD, University of Kansas, 1957) is leader of the Applied Physics Calculations Group of the Neutron Physics Division at ORNL. For several years he has directed the theoretical research in this division in the areas of high-energy nuclear reactions, high-energy nuclear transport, and fusion reactor neutronics. J. M. Barnes (bottom left) (BS, University of Arkansas, 1965) is a member of the Computer Sciences Division at ORNL. His current interests focus on magnetic fusion energy reactor design, particularly on neutronics problems.

INSTRUMENTS

NEUTRON GAUGING TO DETECT VOIDS IN POLYURETHANE

Francis Y. Tsang
Don M. Alger
Robert M. Brugger

Francis Y. Tsang (top) (BS, chemistry and physics, Eastern Oregon State College; MS, nuclear engineering, University of Missouri-Columbia, 1976) is a graduate student in the Nuclear Engineering Department at the University of Missouri. Don M. Alger (center) (BS, naval science, U.S. Naval Academy; PhD, nuclear engineering, University of Missouri-Columbia, 1974) is associate director of the University of Missouri Research Reactor (MURR) with specific interest in neutron radiography. Robert M. Brugger (bottom) (BS, physics, Colorado College; PhD, nuclear physics, Rice University, 1955) is director of MURR, with specific interest in neutron scattering.

ANALYSIS

NEUTRON ACTIVATION ANALYTICAL DETERMINATION OF SMALL AMOUNTS OF NEPTUNIUM-237 IN SOLUTIONS CONTAINING URANIUM, PLUTONIUM, AND FISSION PRODUCTS

Heinz Ruf
Margarete Friedrich

H. Ruf (top) (Dr. rer. nat., Dipl. Chemiker, inorganic chemistry, University of Munich, 1960) has been working since 1962 at Kernforschungszentrum Karlsruhe, Federal Republic of Germany, in the fields of analytical and radioanalytical chemistry. His main interest is in activation analysis. M. Friedrich (technical assistant, chemistry) has been involved since 1967 in various analytical and radioanalytical tasks at Kernforschungszentrum Karlsruhe.