



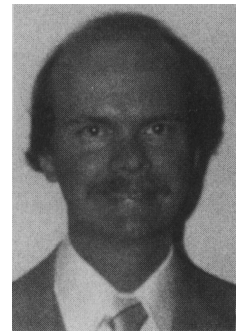
AUTHORS – JANUARY 1979

REACTORS

SUMMARY OF THE ALARA NATURE OF DESIGN EFFLUENTS FROM THE CLINCH RIVER BREEDER REACTOR PLANT

K. L. Ferguson (PhD, Carnegie-Mellon University, 1973) is a senior engineer with the Westinghouse Electric Corporation. At the time this work was performed, he was involved in the licensing of the Clinch River Breeder Reactor Plant. His specific interests consisted of on-site and off-site ALARA issues, environmental impact analysis, radwaste management evaluation, and accident assessment. He is presently a member of the Nuclear Safety Department of the Westinghouse Pressurized Water Reactor Division, with responsibilities in the area of loss-of-coolant accident assessment.

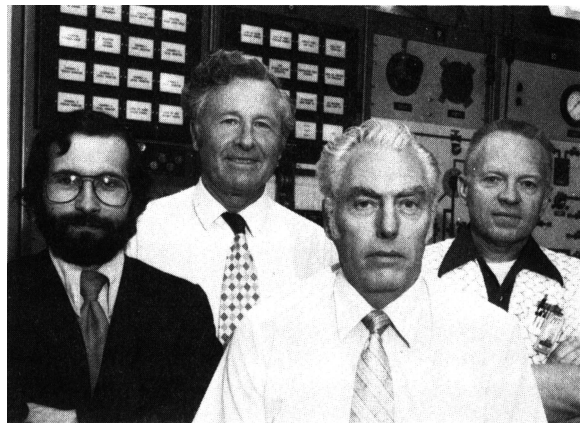
Kenneth L. Ferguson



ASSESSMENT OF CRITICALITY SAFETY

R. C. Lloyd (second from right) (BS, physics, Augustana College, 1949; MS, physics, South Dakota State, 1951) is a staff scientist at Battelle-Pacific Northwest Laboratories (PNL). His current interests are in experimental research in criticality carried out at the Critical Mass Laboratory, and he is also involved in a work group for ANS Standards. **S. W. Heaberlin** (left) (BS, nuclear engineering, Oregon State University, 1973; MS, nuclear engineering, University of Washington, 1977) is a staff member of the Energy Systems Department of PNL. He has worked in the areas of nuclear criticality safety and transportation safety and is currently engaged in reactor neutronics. **E. Duane Clayton** (second from left) (PhD, physics, University of Oregon, 1952) is currently associate manager of criticality analysis at PNL and is a research associate professor in the University of Washington's Department of Nuclear Engineering. He is a pioneer in criticality studies with plutonium, and, since its inception in 1961, has been director of the Plutonium Critical Mass Laboratory of PNL. He is currently chairman of Work Groups 12 and 15 within Subcommittee ANS-8 (Fissionable Materials Outside Reactors) of the ANS Standards Committees. His current technical interests include most aspects of criticality measurements and studies. **Roger D. Carter** (right) (BS, physics, Oklahoma State University, 1951; MS, physics, Oklahoma State University, 1952) is currently a staff engineer for the Criticality Engineering and Analysis Group for Rockwell Hanford Operations. His current interest is criticality safety. He has worked at Hanford since 1952, and for the past 14 years has worked in reactor physics and criticality safety.

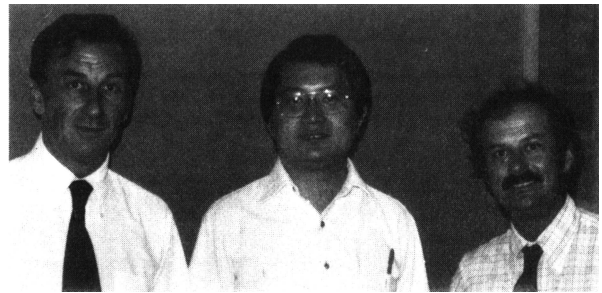
*R. C. Lloyd
S. W. Heaberlin
E. D. Clayton
R. D. Carter*



A PARAMETRIC STUDY OF A LITHIUM-COOLED TOKA-MAK BLANKET

J. Chao (center) (BS, Fu Jen Catholic University; MA, physics, University of Texas, Austin, 1974) is a PhD candidate in the Nuclear Engineering Department at the Massachusetts Institute of Technology (MIT). **B. B. Mikić** (left) (ScD, mechanical engineering, MIT, 1966) is a professor of mechanical engineering at MIT. His interests are conduction, boiling, and condensation heat transfer. **N. E. Todreas** (right) (PhD, nuclear engineering, MIT, 1966) is a professor of nuclear engineering at MIT. His interests are mainly in nuclear reactor engineering and safety analysis.

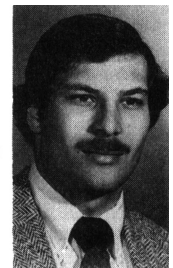
*J. Chao
B. B. Mikić
N. E. Todreas*



PRELIMINARY DESIGN AND NEUTRONIC ANALYSIS OF A LASER FUSION DRIVEN ACTINIDE WASTE BURNING HYBRID REACTOR

David H. Berwald (PhD, nuclear engineering, University of Michigan, 1977) works for the Exxon Research and Engineering Company and is currently assigned to the Laser Fusion Applications Group of the University of Rochester Laboratory for Laser Energetics. His research interests include fusion-fission breeder reactors, advanced fuel cycles, and high-level waste disposal. **James J. Duderstadt** (PhD, engineering science and physics, California Institute of Technology, 1967) is a professor of nuclear engineering at the University of Michigan. His research interests include nuclear reactor theory and design, radiation transport, laser fusion, and statistical mechanics.

*D. H. Berwald
J. J. Duderstadt*

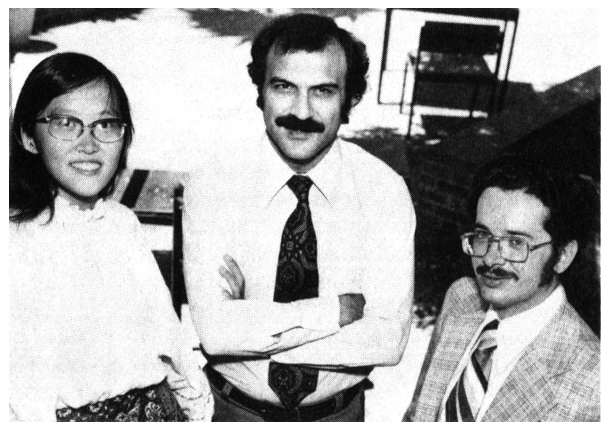


REACTOR SITING

DECISION TABLE DEVELOPMENT AND APPLICATION TO THE CONSTRUCTION OF FAULT TREES

Steven L. Salem (right) [PhD, nuclear engineering, University of California, Los Angeles (UCLA), 1976] is a physical scientist associate at Rand Corporation in Santa Monica, California. From 1976 to 1978, he was lead engineer for safety analysis and licensing for liquid-metal fast breeder reactor designs at Atomics International. His current research interests include risk assessment, proliferation concerns, and enrichment and reprocessing technology. **J. S. Wu** (left) (MS, nuclear engineering, UCLA, 1978) is presently working on her PhD at UCLA. She is interested in applying decision theory to risk-benefit analyses. **George Apostolakis** (center) (PhD, engineering science and applied mathematics, California Institute of Technology, 1973) has been an assistant professor of engineering and applied science at UCLA since 1974. His research interests include mathematical methods for probabilistic safety analysis and risk-benefit.

*S. L. Salem
J. S. Wu
G. Apostolakis*



PROPOSED EXTENSION OF RASCHIG RING STANDARD TO LOW ENRICHED URANIUM FUELS

N. Ketzlach

Norman Ketzlach (MS, chemical engineering, University of Washington, 1944) is a senior scientist in the Division of Fuel Cycle and Material Safety of the U.S. Nuclear Regulatory Commission and has had primary responsibilities in nuclear criticality safety since 1955.

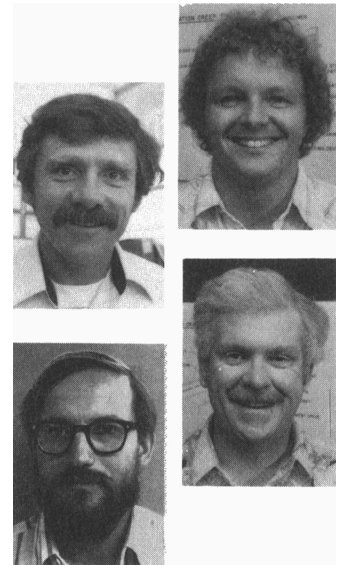


MATERIALS

PROTON SIMULATION OF IRRADIATION-INDUCED CREEP

*E. K. Opperman
J. L. Straalsund
G. L. Wire
R. H. Howell*

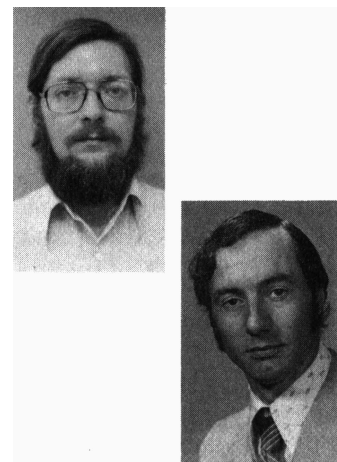
E. K. Opperman (top right) (MS, nuclear engineering, University of Wisconsin, Madison, 1976) is an engineer at the Hanford Engineering and Development Laboratory (HEDL) in irradiation creep. His current interests include irradiation effects on mechanical properties of fusion reactor materials. **J. L. Straalsund** (top left) (PhD, engineering science, Washington State University, 1967) is manager of the Irradiation Creep Section at HEDL. **G. L. Wire** (bottom right) (PhD, physics, University of Illinois, 1972) is a research manager at HEDL. His work has been in the area of neutron irradiation creep, and he is currently involved in neutron irradiation effects on postirradiation mechanical properties, such as tensile and fracture toughness. **R. H. Howell** (bottom left) (PhD, nuclear physics, Michigan State University, 1972) is a research physicist at Lawrence Livermore Laboratory. His work has been in positron lifetime studies of proton- and neutron-irradiated materials, proton scattering cross-section measurements, and atomic x-ray physics.



LOW CYCLE FATIGUE BEHAVIOR OF TYPES 304 AND 316 STAINLESS STEEL TESTED IN SODIUM AT 550°C

*G. J. Zeman
D. L. Smith*

G. J. Zeman (top) (MS, material science engineering, Purdue University, 1974) is a member of the Materials Science Division at Argonne National Laboratory (ANL). His work involves determining the mechanical properties and corrosion behavior of various materials exposed to liquid-metal environments pertaining to liquid-metal fast breeder reactor and liquid-metal magnetohydrodynamic systems. **Dale L. Smith** (PhD, Iowa State University, 1966) is a member of the Materials Science Division at ANL. Since joining ANL in 1966, he has been involved in liquid-metal technology and effects of liquid-metal environment on the corrosion and mechanical properties of structural materials. He has also contributed to the Fusion Power Program in the area of materials selection and first wall design considerations for fusion reactors.



GARDEN HOSE SEPARATION OF GASEOUS ISOTOPES. PART II: SUPERSONIC ACCELERATIONS

Chia-Gee Wang (top) (PhD, solid state physics, Cornell University, 1967) is a consultant on new techniques of isotope separation and on nuclear medicine. He formerly did research on experimental space physics at the University of Chicago and on nuclear matter problems at Cornell University. He was a physics faculty member (nuclear astrophysics) at the Massachusetts Institute of Technology and worked on reactor problems at Combusion Engineering and on solid-state problems at IBM. Starting out as hobby inventions, new isotopes methods and applications have now become his major interest. **Anthony G. M. Davis** (High National Diploma, mechanical engineering, Brunel University, United Kingdom, 1960) is a chartered engineer and a member of the Institute of Mechanical Engineers in the U.K. He is a patent attorney with Ladas, Parry, Von Gehr, Goldsmith and Deschamps in New York, a chartered patent agent, U.K., and a European patent attorney. He was formerly a research and development engineer concerned with auto-flight, guidance, and automation components and systems.

*Chia-Gee Wang
Anthony G. M. Davis*



ANALYSIS

A SOLVENT EXTRACTION-LIQUID SCINTILLATION METHOD FOR ASSAY OF URANIUM AND THORIUM IN PHOSPHATE-CONTAINING MATERIAL

Edward J. Boucher (top) (BS, civil engineering, Arizona State University, 1977) is currently a graduate student at Stanford University. The paper summarizes his undergraduate research with the Chemical Technology Division at Oak Ridge National Laboratory (ORNL). This work has received the 1977 Outstanding Paper Award from the ANS Radiation and Isotopes Division, as well as an Outstanding Paper Award at the 1977 Health Physics Society Convention in Atlanta. **John W. McKlveen** (center) (BS, U.S. Naval Academy, 1965; PhD, nuclear engineering, University of Virginia, 1974) is a faculty member and Radiation Safety Officer at Arizona State University. His previous work included service in the Naval nuclear-powered submarine program and research in areas of trace contaminants and low-level radiation. His present interests include environmental radioactivity, uranium mining and milling, tailings disposal, and trace element analysis using 14-MeV neutron generators. **W. J. McDowell** (bottom) (BS, chemistry, Tennessee Technological University, 1951; MS, inorganic chemistry, The University of Tennessee, 1954) did his graduate work in liquid ammonia chemistry. From 1951 to 1952, he was an analytical chemist at the U.S. Atomic Energy Commission's Oak Ridge Y-12 Plant. From 1954 to the present, he has done research (both fundamental and process development) in separations chemistry at ORNL, specializing in solvent extraction and ion exchange techniques.

*Edward J. Boucher
John W. McKlveen
W. J. McDowell*

