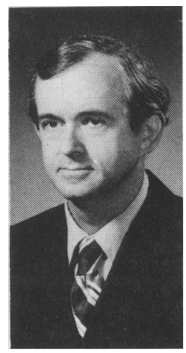
nuclear technology

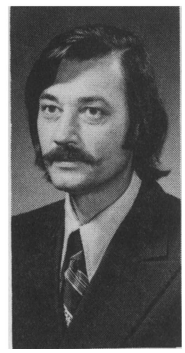
AUTHORS — MAY 1974

OCEAN—NUCLEAR ENERGY

SITING CONSIDERATIONS FOR FUTURE OFFSHORE NUCLEAR ENERGY STATIONS

Otto H. Klepper
Truman D. Anderson

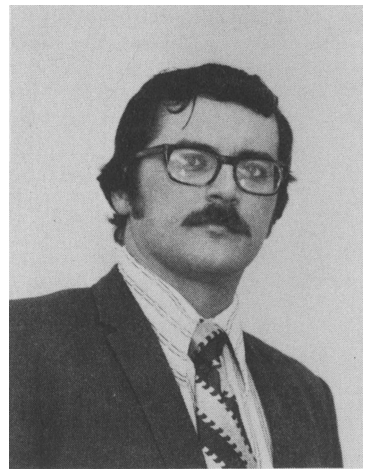




O. H. Klepper (top) (MS, engineering science, University of Tennessee, Oak Ridge School of Reactor Technology) is a staff member in the Reactor Division of the Oak Ridge National Laboratory. He has been involved in reactor heat transfer and nuclear ship propulsion evaluations. His current work is in the engineering assessment of offshore reactor plants. Truman D. Anderson (BS, mechanical engineering, University of Missouri-Rolla; MS, nuclear engineering, University of Tennessee; graduate of the Oak Ridge School of Reactor Technology) was involved in several early nuclear power developments, including Shippingport and reactors for Army and Maritime applications. More recently, his work has been related to the application of nuclear energy for desalting, agriculture, and industrial processes. He is currently associate director of the Nuclear Desalination Program at the Oak Ridge National Laboratory.

ATLANTIC GENERATING STATION

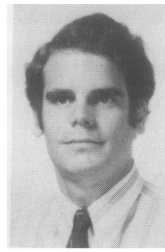
Joseph A. Ashworth

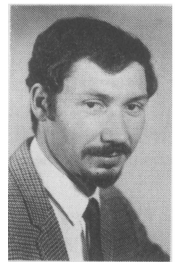


Joseph A. Ashworth (BS, engineering, Lehigh University, 1960) is project engineer for the Atlantic Generating Station Project of Public Service Electric and Gas Company. He is presently assigned consultant duties, working with Offshore Power Systems, the designer and manufacturer of the floating nuclear plant. Prior to this assignment, he participated in design, engineering, and startup of both nuclear and fossil-fired land-based generating stations with particular emphasis on the engineering development of cryogenic gaseous radwaste treatment systems. He is a registered professional engineer, an associate member of the ASME, a member of ANS, and has authored several previous papers on various aspects of nuclear plant design.

POSSIBLE EFFECTS OF IONIZING RADIATION UPON MARINE LIFE AND SOME IMPLICATIONS OF POSTULATED ACCIDENTAL RELEASES OF RADIOACTIVITY

A. F. Moscati
R. C. Erdmann

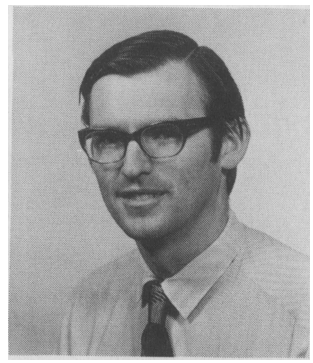




Anthony F. Moscati (top) (doctoral candidate in the Environmental Science and Engineering Program, University of California, Los Angeles) is presently fulfilling the internship requirement for the degree of Doctoral of Environmental Science and Engineering (DEnv) with the Environmental Assessment Group at the Bechtel Power Corporation, Los Angeles. His interests include the effects of energy production on the environment and the study of marine ecosystems. R. C. Erdmann (PhD, California Institute of Technology, 1965) is currently an associate professor at the School of Engineering and Applied Science at the University of California, Los Angeles. He is presently on leave at the Science Applications Corporation. His principal areas of engineering research include water and fast-reactor safety, reactor siting, and neutron physics.

NATURAL CONVECTION COOLING FOR OFFSHORE NUCLEAR POWER PLANTS

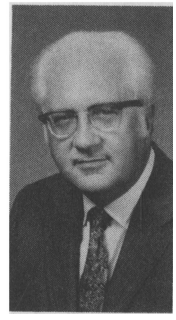
Chester D. Kylstra



Chester D. Kylstra (PhD, University of Florida, 1963) is an associate professor of nuclear engineering at the University of Florida. His main research areas have involved feasibility analysis and preliminary design studies of advanced nuclear concepts. He is presently involved in a general systems study of the interrelations between man's energy sources and systems, economies, and natural system.

CONTAINER SHIPS: OIL FUELED VERSUS NUCLEAR POWERED

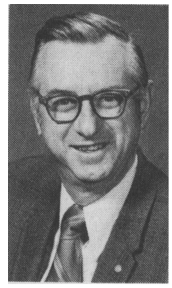
Thomas B. Dade
Warren F. Witzig

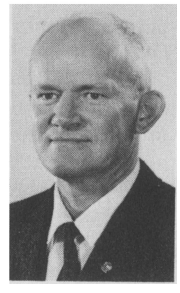


LCDR Thomas B. Dade (top) (MS, nuclear engineering, 1972; MBA, The Pennsylvania State University, 1973) has had extensive experience in the Nuclear Navy; he is presently assigned to the Supervisor of Shipbuilding Office at the Newport News Shipbuilding and Dry Dock Company in the SSN Project Office. Warren F. Witzig (BS, electrical engineering, Rensselaer Polytechnic Institute; MS, electrical engineering, and PhD, physics, University of Pittsburgh) is professor and head of the Nuclear Engineering Department at The Pennsylvania State University. He has had extensive experience in reactor research, testing, and design, with Westinghouse Research Laboratories, the Manhattan District Project, and the Knolls Atomic Power Laboratory.

REACTOR POWER PLANT FOR UNDERSEA APPLICATIONS

Robert I. Brasier
Carroll B. Mills

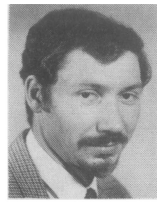
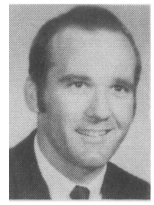
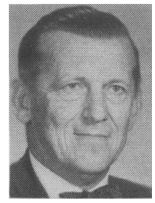




Robert I. Braiser (top) (ScD, engineering, University of New Mexico, 1965) is assistant department head, Engineering Department, Los Alamos Scientific Laboratory (LASL) of the University of California, Los Alamos, New Mexico. He joined LASL in 1951 and has been interested in reactor design and development since 1958. Carroll B. Mills (MS, physics, University of Hawaii, 1941) is a physicist whose major interest is in the correlation of measured reactivity, criticality, etc., with values calculated from transport theory and differential neutron cross sections.

SOME CHARACTERISTICS OF RADIOISOTOPE POWER SOURCES IN AN OCEAN ENVIRONMENT

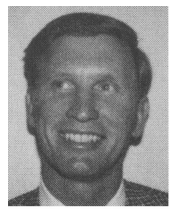
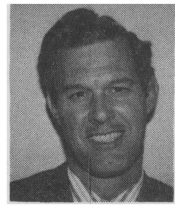
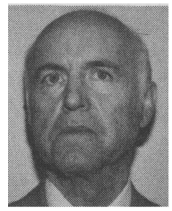
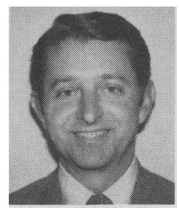
R. C. Erdmann
E. C. Gritton
M. J. Ozeroff

Robert C. Erdmann (top) (PhD, California Institute of Technology, 1965) is currently an associate professor at the School of Engineering and Applied Science at the University of California, Los Angeles. He is presently on leave at the Science Applications Corporation. His principal areas of engineering research include water and fast-reactor safety, reactor siting, and neutron physics. Eugene C. Gritton (center) (PhD, University of California, Los Angeles, 1966), a senior member of the research staff of the RAND Corporation, is currently project leader for the Advanced Vehicle and Propulsion Technology Program. Michael J. Ozeroff (bottom) (PhD, Yale University, 1951), a resident consultant for RAND Corporation for four years, has been engaged in a number of systems engineering studies in the areas of high energy accelerators, transportation, and power systems.

COMPACT REACTOR POWER SYSTEMS

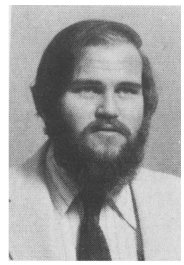
J. E. Brunings
D. G. Mason
W. B. Thomson
J. H. Van Osdol

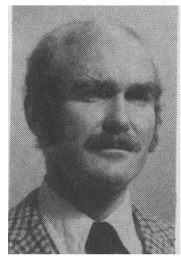





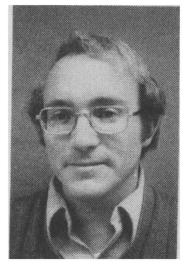
Jay E. Brunings (top left) (ME and MS, Stevens Institute of Technology; MBA, University of California, Los Angeles) is project engineer of LMFBR Programs in the Atomics International Division of Rockwell International Corporation. He has attended ORSORT, and was manager of systems engineering for the SNAP 10A Reactor Thermoelectric Development and Flight Test Program. For more than 12 years, he has been associated with the design, development, and application of SNAP nuclear power systems. Donald G. Mason (top right) (MS, electrical engineering, Purdue University, 1957) is project manager of the System Integration and Test, Space Systems Program at Atomics International. His work has included control and safety analysis of nuclear power reactors and small space nuclear power systems. He was project manager for the SNAP 8 nuclear system and has assisted in many studies of these compact nuclear systems for both space and terrestrial applications. Wallace B. Thomson (bottom left) (AB, physics and chemistry, Montclair State College), of Atomics International's Reactor Engineering Group, has performed component and systems studies of zirconium hydride power systems. He studied graduate mathematics and physics for two years at New York University and Columbia University. At the General Electric Company, Aircraft Nuclear Propulsion Department, he performed the design of advanced reactors and systems. He holds two AEC patents on reactors. James H. Van Osdol (bottom right) (BS, mechanical engineering, Bradley University) has completed graduate studies at the University of California, Los Angeles in the areas of nuclear engineering, heat transfer, and fluid flow. With the Reactor Engineering Group of Atomics International, he has spent the last 12 years conducting and managing system engineering activities for SNAP reactor power systems.

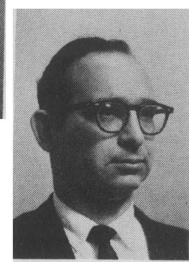
DAMPING OF XENON OSCILLATIONS IN THE MAINE YANKEE REACTOR

W. R. Corcoran
J. R. Humphries
H. J. Litke
J. D. LeBlanc





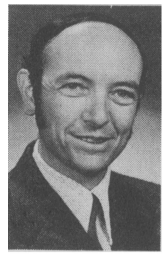


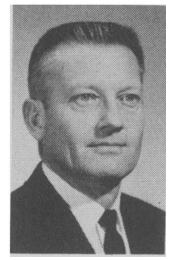


W. R. Corcoran (top left) (PhD, nuclear engineering, M.I.T.) is manager of licensing in the Nuclear Power Department of Combustion Engineering, Inc. Previously, he was the supervisor of core operational control (physics) at C-E. In that position his primary area of interest was the operational implications of xenon instabilities in large pressurized water reactors. J. R. Humphries (top right) (PhD, nuclear engineering, University of Michigan, 1972) is supervisor of the Control and Performance Analysis Group in the nuclear power department of Combustion Engineering, Inc. He is responsible for evaluating the operational implications of xenon instabilities and for the development of oscillation and load follow/maneuvering control strategies. J. D. LeBlanc (bottom left) (BS, electrical engineering, Worcester Polytechnic Institute) is the assistant to the plant superintendent at Main Yankee Atomic Power Company, Wiscasset, Maine. He is responsible for implementation of the quality assurance program, plant technical support, and training. Prior to this, LeBlanc was the reactor and computer supervisor and startup test group coordinator. H. J. Litke (bottom right) (MS, physics, New York University, 1954) is currently a principal physicist in the nuclear power department of Combustion Engineering. He has been involved in evaluating core stability for large pressurized water reactors. His current interest is in the development of specific procedures for limiting the consequences of xenon oscillations.

MINIMUM CRITICAL MASSES OF ARRAYS OF FISSILE OXIDE AND METAL ELEMENTS IN WATER

D. C. Hunt
C. L. Schuske

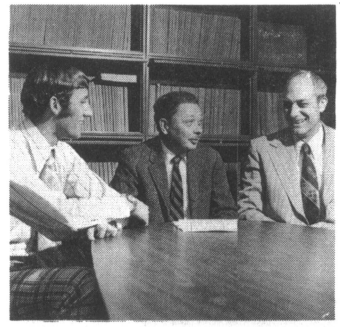




D. C. Hunt (top) (PhD, University of Colorado) is an associate scientist in the Nuclear Safety Department of Dow Chemical Company's Rocky Flats Division. Immediately prior to joining Dow, he was an assistant professor of physics at the University of Wyoming from 1961 to 1963. C. L. Schuske (MS, physics, University of Southern California) is director of the Nuclear Safety Group at Dow Chemical's Rocky Flats Division. His areas of interest are critical mass physics and process plant nuclear criticality safety.

THE ORNL BENCHMARK EXPERIMENT FOR NEUTRON TRANSPORT IN THICK SODIUM

R. E. Maerker
F. J. Muckenthaler
R. L. Childs



R. E. Maerker (center) (PhD, physics, University of Tennessee, 1953) is a member of the Neutron Physics Division of Oak Ridge National Laboratory (ORNL). He has worked in the fields of photographic theory and exterior rocket ballistics, and has been involved in Monte Carlo solutions to radiation transport and shielding problems since 1959. He is a member of the CSEWG data testing and shielding subcommittees. F. J. Muckenthaler (right) is a member of the Neutron Physics Division and has been head of the experimental group in radiation shielding at ORNL's Tower Shielding Facility since 1963. He came to ORNL in 1951 after two years at Fairchild Engine. R. L. Childs (left) (MS, nuclear engineering, University of Tennessee, 1972), a member of the Computer Sciences Division of Union Carbide Nuclear Division, has worked in the radiation transport and shielding area for four years.