

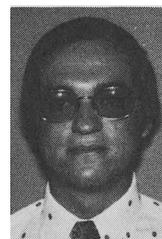
AUTHORS — MAY 1975

REACTORS

TOTAL ENERGY INVESTMENT IN NUCLEAR POWER PLANTS

Charles T. Rombough (left) (MS, University of Texas, 1970) is a doctoral candidate at the University of Texas. His research deals with the total energy impact of nuclear power plants with respect to engineering, economic, and environmental concerns. He has also worked in computer control of reactors and computer design. When he completes the PhD requirements, he will be joining the Babcock & Wilcox Co. at Lynchburg, Virginia. Billy V. Koen (ScD, SM, Massachusetts Institute of Technology, Diplome d'Ingénierie, l'Institut National des Science et Techniques Nucléaires, Saclay, France) is presently associate professor of mechanical engineering and director of the Bureau of Engineering Teaching at The University of Texas at Austin. He has been associated with several national laboratories of the U.S. Atomic Energy Commission and was consultant to the Reactor Safety Division of the French Atomic Energy Commission Laboratory at Saclay, France, in 1972. Koen's major research interests are in the areas of reactor reliability, core kinetics, and artificial intelligence.

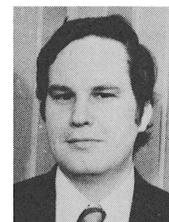
*Charles T. Rombough
Billy V. Koen*



ON THE MATCHING OF FUSION BREEDERS TO HEAVY-WATER REACTORS

Guy LaVergne (top) (MSc, University of Quebec, 1973) is currently with Hydro Quebec in their nuclear power program. His main interests are reactor engineering and control. James E. Robinson (center) (PhD, nuclear engineering, Massachusetts Institute of Technology, 1971) is currently an assistant professor of engineering physics at McMaster University. His current research interests include gas target neutron generators and materials problems associated with fusion reactors. Jacques G. Martel (bottom) (PhD, nuclear engineering, Massachusetts Institute of Technology, 1971) is currently an assistant professor at the Energy Research Center of the University of Quebec. His present interests are in materials problems associated with fusion reactors.

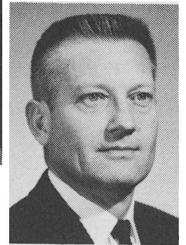
*G. LaVergne
J. E. Robinson
J. G. Martel*



FISSILE-SOLUTION STORAGE IN PIPES ISOLATED BY CONCRETE OR WATER

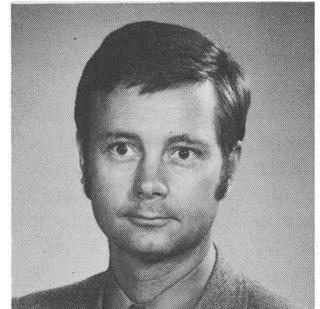
S. J. Altschuler
C. L. Schuske

S. J. Altschuler (left) (BChE, The Cooper Union for the Advancement of Science and Art, 1957) is a research specialist at Dow Chemical USA, Rocky Flats Division, working on computer calculations for nuclear criticality safety purposes. C. L. Schuske (MS, physics, University of Southern California) is director of the Nuclear Safety Group at Dow Chemical USA, Rocky Flats Division. His areas of interest are critical mass physics and process plant nuclear criticality safety.

**MATERIALS****DIFFUSION ANALYSES FOR SYSTEMS OF SPHERICAL PARTICLES**

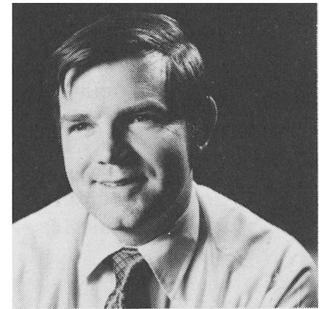
Walter A. Stark, Jr.

Walter A. Stark, Jr. (PhD, physical chemistry, University of California, Berkeley, 1967) is a staff member of the High-Temperature Chemistry Group at Los Alamos Scientific Laboratory. His present research is safety related and involves impurity reactions in the primary coolant loop of the HTGR.

**FATIGUE-CRACK PROPAGATION IN A CAST STAINLESS STEEL**

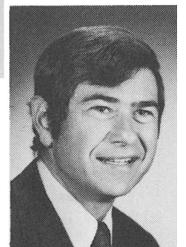
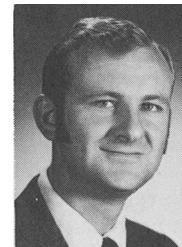
Lee A. James

Lee A. James (BS, mechanical engineering, 1959; MS, mechanical engineering, 1965, University of Washington) is currently a senior research engineer with the Westinghouse Hanford Company. He has been engaged for several years in the characterization of materials behavior using fracture mechanics techniques, and in the application of fracture mechanics to reactor structural components.

**RADIOISOTOPES****BENEFIT/RISK ANALYSIS OF CARDIAC PACEMAKERS POWERED BY BETACEL® PROMETHIUM-147 BATTERIES**

T. H. Smith
J. Greenborg
W. T. Matheson

T. H. Smith (left) (PhD, mechanical engineering, University of Utah, 1968) was responsible for thermal and structural analyses related to nuclear safety and risk/benefit studies at the Donald W. Douglas Laboratories. Presently an engineering associate at the Battelle-Northwest Laboratories, he is involved in safety analysis of waste management systems and in fuel-cycle projections. J. Greenborg (right) (MS, nuclear engineering, University of Washington, 1962) has been chief of the analysis and safety sections of the Donald W. Douglas Laboratories and has contributed to the development of the Betacel-powered pacemaker in the areas of isotope containment structure, dose rate control,



and the risk/benefit analysis. Greenberg is currently program manager for energy conversion at the Battelle-Northwest Laboratories with responsibilities in the fossil fuel, synthetic fuel, and energy storage technologies. W. E. Matheson (right) (BA, BSc, electrical engineering, University of British Columbia; PhD, physics, Purdue University) is director of the Donald W. Douglas Laboratories, McDonnell Douglas Corporation. Here, under his direction, have been developed the thermionic and beta-voltaic radioisotope batteries, the first nuclear-powered artificial heart device, and the heat pipe soil stabilizers for the Alaska pipeline.



NUCLEAR EXPLOSIVES

COMPUTER DESIGN OF HIGH-EXPLOSIVE EXPERIMENTS TO SIMULATE SUBSURFACE NUCLEAR DETONATIONS

*Donald E. Burton
Charles M. Snell
Jon E. Bryan*

Donald E. Burton (left) (BS, engineering physics, University of Missouri, Rolla, 1962; PhD, theoretical physics, Kansas State University, 1969) and Charles M. Snell (center) (BA, physics, Vanderbilt University; MS, astronomy, University of Arizona, 1969) are former employees of the U.S. Army Corps of Engineers Waterways Experiment Station, Explosive Excavation Research Laboratory. Along with Jon B. Bryan (right) (BS, physics, Kansas State University, 1962; PhD, physics, Kansas State University, 1969), they are presently employed by the Earth Sciences Division of the Lawrence Livermore Laboratory. Their research activities in the Computational Rock Mechanics Group include the development and application of large-scale shock wave propagation computer codes.



RADIOACTIVITY TRAPPED IN MELT PRODUCED BY A NUCLEAR EXPLOSION

I. Y. Borg

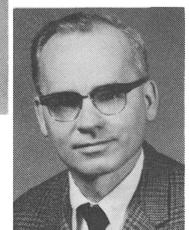
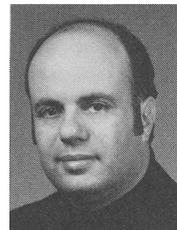
Iris Y. Borg (PhD, University of California, Berkeley, 1954) is a geologist at Lawrence Livermore Laboratory and has worked on phenomenology of nuclear explosions. This involves response of rocks to high shock pressures, distribution of radioactivity within nuclear chimneys, and its subsequent migration in the ground water.



DYNAMIC NONDESTRUCTIVE INSPECTION USING THERMAL NEUTRONS

*Paul J. Rose
Alan M. Jacobs
Edward S. Kenney*

Paul J. Rose (top) (MS, Indiana University, 1967; ME, Pennsylvania State University, 1974) is a graduate student in the Nuclear Engineering Department of The Pennsylvania State University where his doctoral research area is neutron radiography. Alan M. Jacobs, PhD (left), and Edward S. Kenney, PhD (right), are professors of nuclear engineering at The Pennsylvania State University where they guide research endeavors in the areas of nuclear reactor physics and control, radiation transport, and various new radiographic techniques.



TIME-RESOLVED NEUTRON RADIOGRAPHY USING A FAST PULSE REACTOR

C. L. Aseltine
R. A. Strich

Clifford L. Aseltine (left) (PhD, physics, Wayne State University, 1967) joined the Reactor Branch of the U.S. Army Ballistic Research Laboratories (USABRL) in 1968. Aseltine's research areas have included radiation damage in ferroelectrics and fast neutron radiography. He is presently employed at the Explosive Effects Branch, USABRL, conducting research in explosive charge design. Richard A. Strich, U.S. Army (MS, physics, University of Connecticut, 1972), is presently assigned as a physicist at the Army Pulse Radiation Facility, USABRL, where he is concerned with the adaptation of the Aberdeen Reactor for dynamic and static neutron radiographic testing of munitions related materials.



A COMPREHENSIVE EXPRESSION FOR THE DOUBLING TIME OF FAST BREEDER REACTORS

R. W. Hardie
W. W. Little
R. P. Omberg

R. Wayne Hardie (right) (BS, physics, South Dakota State University, 1964; MS, nuclear engineering, Oregon State University, 1969) is a member of the Methods Development Section at Hanford Engineering Development Laboratory (HEDL). His interests are model development for reactor physics and for forecasting optimum power-growth patterns. W. W. Little, Jr. (center) (BS, physics, MIT, 1960; MS, nuclear engineering, MIT, 1962; ScD, nuclear engineering, MIT, 1964) is manager of the Energy Systems Analysis Section at HEDL. R. P. Omberg (left) (BS, engineering, California State Polytechnic, 1960; MS, nuclear engineering, University of California, Berkeley, 1966; PhD, engineering science, University of California, Berkeley, 1969) is manager of the Methods Development Section at HEDL. His interests are model development and analysis in both reactor physics and long-range energy system forecasting.

