

## AUTHORS — OCTOBER 1974

### REACTORS

#### COMPARISON OF TWO- AND THREE-DIMENSIONAL CALCULATIONS OF SUPER PROMPT CRITICAL EXCURSIONS

Adolf Birkhofer (top) is professor for reactor dynamics and reactor safety and head of the laboratory for reactor control and plant safety (LRA) at the University of Munich, Germany. Albert Schmidt (center) (Dr.-Ing., University of Munich, Germany) is project leader for space-time kinetics with emphasis on reactivity accidents in LWRS. Wolfgang Werner (bottom) (Dr. rer. nat., University of Munich, Germany) is head of the mathematics group in the LRA. His interests include numerical analysis.

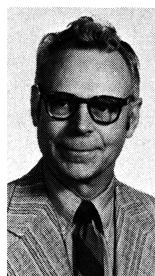
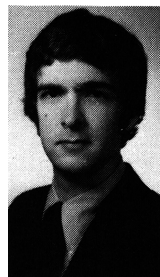
*A. Birkhofer*  
*A. Schmidt*  
*W. Werner*



#### TRANSIENT CRITICAL HEAT FLUX AND SPACER GRID STUDIES

L. A. Zielke (left) (ME, Ohio State University, 1973) is currently a senior research engineer at The Babcock & Wilcox Alliance Research Center. Since his employment with B&W in 1970, Zielke has been planning, executing, and evaluating steady state and transient critical heat flux experiments, loss of coolant blowdown work, mixing studies, and void fraction experiments. R. H. Wilson (MS, chemical engineering, University of Tennessee) has been planning experiments and applying the results of critical heat flux tests since 1959. Currently, he is updating methods of applying laboratory critical heat flux data to nuclear core design.

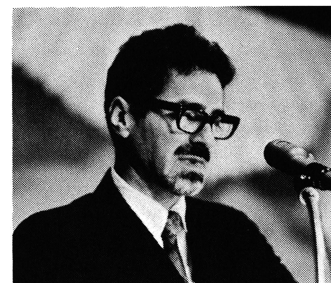
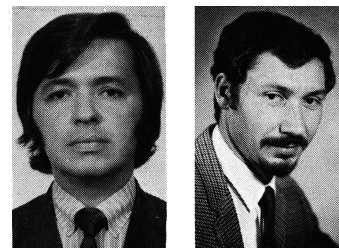
*L. A. Zielke*  
*R. H. Wilson*



## FISSION GAS BEHAVIOR IN FAST REACTOR FUEL UNDER TRANSIENT POWER CONDITIONS

*J. W. Dias  
D. Okrent  
R. C. Erdmann*

The doctorate topic of Jose W. Dias (top left) (PhD, nuclear engineering, University of California, Los Angeles, 1973) was concerned with the behavior of fission gases in fast reactor fuel rods under power transients. At present, Dias is working on nuclear fuel development for the Companhia Brasileira de Tecnologia Nuclear (CBTN) in Rio. D. Okrent (bottom) (PhD, physics, Harvard University) is a professor in the School of Engineering and Applied Science at the University of California, Los Angeles, and is a member of the USAEC Advisory Committee on Reactor Safeguards. His research interests include reactor safety, fast reactors, nuclear fuel element behavior, fusion reactor safety, and risk-benefit considerations. R. C. Erdmann (top right) (PhD, California Institute of Technology, 1965), an associate professor in the School of Engineering and Applied Science at the University of California, Los Angeles, is on leave and presently at the Science Applications Corporation. His principal areas of engineering research include water and fast reactor safety, reactor siting, and neutron physics.

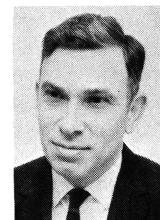
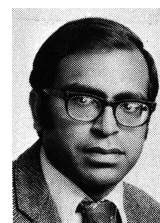


## FUEL CYCLES

## AN EQUILIBRIUM APPROACH TO OPTIMAL IN-CORE FUEL MANAGEMENT FOR PRESSURIZED WATER REACTORS

*Krishan Chitkara  
Joel Weisman*

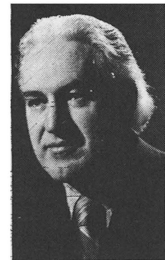
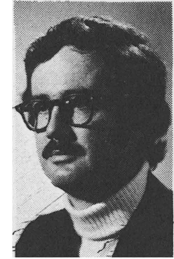
Krishan Chitkara (left) (PhD, nuclear engineering, University of Cincinnati, 1972) is a senior engineer in the Nuclear Energy Division of General Electric Company (GE), San Jose, California. Prior to joining GE in March 1974, he was group leader of the Core and Fuel Cycle Analysis Group at Southern California Edison. His current interests include fuel cycle optimization, advanced nuclear design, and core evaluations. Joel Weisman (PhD, University of Pittsburgh) is a professor of nuclear engineering at the University of Cincinnati. Prior to joining the University in 1968, he spent over 18 years in industry. His last industrial position was that of manager of thermal and hydraulic analysis for the PWR Division of Westinghouse Nuclear Energy Systems. He is coauthor of the ANS monograph, *Thermal Analysis of Pressurized Water Reactors*, and of the new Prentice-Hall book *Introduction to Optimization Theory*.



### FABRICATION PROCEDURES FOR UNALLOYED MOLYBDENUM

A. J. Moorhead (top) (BS, metallurgical engineering, University of Tennessee, 1962) has worked in the Welding and Brazing Group of the Metals and Ceramics Division at the Oak Ridge National Laboratory for the past five years. He has been actively involved in the fabrication of components from stainless steels, nickel-based alloys, refractory alloys, and precious metals. He is conducting studies on the welding behavior of austenitic stainless steels and the deposition of hard-facing materials. Moorhead is a project leader on a program to fabricate the cladding for a radio-isotope thermoelectric generator. J. R. DiStefano (center) (MS, University of Tennessee, 1964) is a metallurgist in the Materials Compatibility Group of the Metal and Ceramics Division at the Oak Ridge National Laboratory. He has been involved in alkali metal corrosion studies, metal-oxide compatibility studies, and materials development for Molten Salt Breeder Reactor applications. R. E. McDonald (bottom) (BS, metallurgical engineering, Missouri School of Mines and Metallurgy, 1950) has been associated with Pratt and Whitney Aircraft, Westinghouse, and the Metals and Ceramics Division at the Oak Ridge National Laboratory. He has been involved mainly in melting and fabricating of high temperature materials for reactor use.

A. J. Moorhead  
J. R. DiStefano  
R. E. McDonald



### THE EFFECT OF OXYGEN ON THE CORROSION OF VANADIUM AND V-20% TI BY LIQUID LITHIUM

J. H. DeVan (right) and R. L. Klueh are members of the Metals and Ceramics Division of the Oak Ridge National Laboratory. Klueh (PhD, Carnegie-Mellon) is currently conducting mechanical property investigations in support of the Liquid-Metal Fast Breeder Reactor Program, and DeVan (MS, Tennessee) is involved in materials compatibility studies related to the development of thermonuclear reactors.

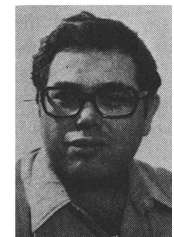
J. H. DeVan  
R. L. Klueh



### A GENERAL APPROACH TO THE DESIGN OF RADIATION GAUGES

A. Notea (left) (PhD, Hebrew University, Jerusalem, Israel, 1969) is senior lecturer in the Department of Nuclear Engineering, Technion, Israel. For seven years he worked at the IRR-1 reactor of the Israel AEC on fission reactions and the application of nuclear techniques. For the past six years he has been engaged in radiation engineering, notably the development and applications of radiation-gauging techniques mainly for industry. Y. Segal (DSc, nuclear science, Technion, Israel, 1964) specializes in the following: (a) transport of photons and neutron in geometrical configurations appearing in nuclear gauges and measuring systems which lead to deeper understanding of their functions, and (b) the study of the meaning of the information obtained from nuclear measuring systems through a general approach to the characterization and optimization of source-medium-detector assemblies.

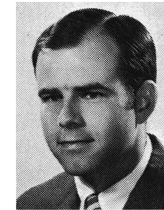
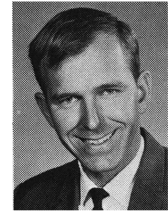
A. Notea  
Y. Segal



## GAMMA-RAY ASSAY OF LOW-ENRICHED URANIUM WASTE

R. B. Walton (top) (PhD, physics, University of Wisconsin) and R. A. Forster (bottom) (PhD, nuclear engineering, University of Virginia) are staff members at the Los Alamos Scientific Laboratory, working in the Nuclear Analysis Research Group. Capt. E. I. Whitted (center) (MS, physics, U.S. Air Force Institute of Technology) is a nuclear research officer, U.S. Air Force, on assignment to this group. Their research activities have included radiation transport calculations and neutron and gamma-ray measurements for the development of techniques for non-destructive assay of fissionable materials.

*R. B. Walton  
E. I. Whitted  
R. A. Forster*

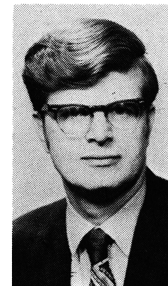


## MATERIALS

## EMPIRICAL SWELLING EQUATIONS FOR SOLUTION-ANNEALED TYPE 304 STAINLESS STEEL

John P. Foster (left) (PhD, Drexel University, 1971), a senior engineer at Westinghouse Advanced Reactors Division, is presently interested in irradiation creep swelling and their relationship and application to reactor structural component deformation. R. V. Strain (BS, Colorado School of Mines; MS, Iowa State University) is a member of the Irradiations Performance Group of the Materials Science Division at Argonne National Laboratory. From 1966 to 1972 he worked at the Fuels Examination Facility in Idaho examining irradiated fuels and materials

*John P. Foster  
Robert V. Strain*



## INSTRUMENTS

## DIGITAL PERIOD METER

W. R. Sheets has been with the Nuclear Safety Department of Dow Chemical U.S.A.'s Rocky Flats Plant for eleven years. He is presently a research specialist.

*W. R. Sheets*

