

EDITOR

ROY G. POST Department of Nuclear Engineering University of Arizona, Tucson, Arizona 85721

ANS OFFICERS

JOHN W. SIMPSON, President
J. ERNEST WILKINS, Jr.,
Vice President-President Elect
HARRY LAWROSKI, Treasurer
RAYMOND D. MAXSON, Assistant Treasurer
OCTAVE J. DU TEMPLE, Executive Director

ANS STAFF

NORMAN H. JACOBSON, Publications Manager RUTH FARMAKES, Assistant Staff Editor BARRETT M. SCHROEDER, Copy Editor SIEGFRIED H. KRAPP, Production Manager KATHRYN L. FROEHLICH, Production Assistant MERRILL ALBERTUS, Production Coordinator

Advertising

RICHARD HARRIS, Advertising Sales Manager ROSEMARY HARVEY, Circulation Manager

EDITORIAL ADVISORY BOARD

SPENCER H. BUSH, ERIC T. CLARKE, VAUGHN E. CULLER, GARY J. DAU, W. KENNETH DAVIS, MILTON C. EDLUND, WALTER H. ESSELMAN, PAUL R. FIELDS, JOHN H. FRYE, JR., STEPHEN J. GAGE, O. H. GREAGER, MARSHALL GROTENHUIS, VINCENT P. GUINN, DAVID B. HALL, DANIEL F. HANG, JOSEPH M. HENDRIE, PAUL KRUGER, STEPHEN LAWROSKI, FORREST J. REMICK, WALTON RODGER, ZOLTON ROSZTOCZY, WILSON TALLEY, EDWIN L. ZEBROSKI

Address all manuscript and editorial communications to the editorial offices, Nuclear Technology, Department of Nuclear Engineering, The University of Arizona, Tucson, Arizona 85721.

Nuclear Technology is published monthly by the American Nuclear Society, Inc., with executive and business offices at 244 East Ogden Avenue, Hinsdale, Illinois 60521, telephone 312/325-1991. Subscription rate is \$30 or \$110/four volumes per year. Single copy price is \$13 (special issue slightly higher). It is printed in Danville, Illinois, and second class postage is paid at Hinsdale, Illinois, and at additional mailing offices. Copyright © 1973 by the American Nuclear Society, Inc.

Statements made by authors of contributions to the various departments or of technical papers and notes do not necessarily reflect the viewpoint of the American Nuclear Society nor should their appearance herein be construed as tacit approval or endorsement by the Society. Abstracts in Nuclear Technology may be freely republished anywhere at any time.

ON THE COVER:

This month's cover is taken from the paper by List and Knudsen of the Danish Atomic Energy Commission. These photos show pellet movement and interaction with cladding.

CONTENTS - NOVEMBER 1973

TECHNICAL PAPERS

REACTORS		

Spectral Analysis of Sampled Nuclear Reactor Plant Data with Heterodyne Digital Filtering Techniques / H. Roggenbauer, W. Seifritz, T. Lindmo	79
FUEL CYCLES	
Determination of Optimum Fuel Loadings in Pressurized Water Reactors Using Dynamic Programming / Richard B. Stout, Alan H. Robinson	86
FUELS	
UO ₂ Pellet-Stack Shortening in a Boiling Water Reactor / F. List, P. Knudsen	103
Use of Metallic Thorium for LWBRs and LWRs / G. B. Zorzoli	109
First Report on Apparatus to Simulate In-Reactor Transient Heating Conditions in Oxide Fuel Columns / B. J. Wrona, J. T. A. Roberts, E. Johanson, W. D. Tuohig	114
ANALYSIS	
Californium-252 Assay System for FBR-Type Fuel Pins / H. O. Menlove, R. A. Forster, J. L. Parker, Darryl B. Smith	124
TECHNICAL NOTES	
MATERIALS	
Effect of Minor Alloy Variations on the Thermal Densification of Austenitic Stainless Steels / J. F. Bates, M. M. Paxton, J. L. Straalsund	134
DEPARTMENTS	
AUTHORS	74 77 136