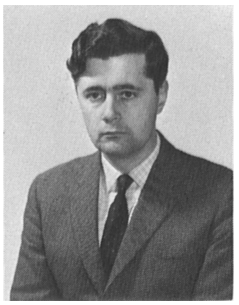
AUTHORS AND PAPERS

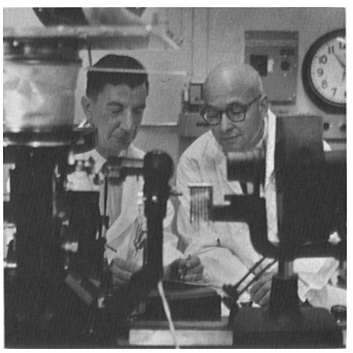
The highly condensed summaries of papers and technical notes (below) are intended to assist the busy reader in determining the order in which to read the technical material. Biographical comments are for human interest.



FISSION-PRODUCT GAS RELEASE

Fission product gas, released from UO_2 exposed to a varying power throughout its life, is best estimated by calculating the release at maximum power for the burnup to that time and adding the increments released subsequently at lower powers.

René Soulhier (not pictured), on leave from the French Commissariat à l'Énergie and presently attached to the Chalk River staff at AECL, is in charge of the CEA's studies of fission-gas release from UO_2 fuel. His docteur ingénieur degree is from the Université de Toulouse. M. J. F. Notley, author of three previous papers in Nuclear Applications, *is a member of AECL's Reactor Materials Branch, where he is concerned with the design and analysis of in-reactor experiments on fuel element performance.*



SODIUM BOND REMOVAL

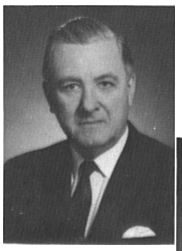
Distillation removes sodium from sodium-bonded mixed uranium-plutonium carbide fuel pellets without affecting its microstructure, whereas dissolution may alter its porosity.

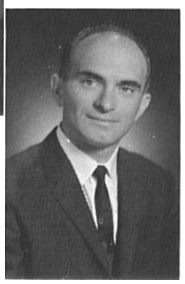
Felix B. Litton (right) of LASL's Reactor Technology Division works on problems related to the compatibility of sodium-bonded mixed carbide fuels. John H. Bender is in charge of Metallography.

POWER COST REDUCTION WITH THORIUM

An attractive cooperative fuel cycle, which uses thorium in a fast reactor blanket to produce clean ^{233}U for hardened-spectra light-water reactors, may reduce power costs for both.

L. W. Lang, a consulting engineer in the Advanced Operational Planning Group of Douglas-United Nuclear, Inc., was co-author of an article on isotopes appearing in the November 1967 Nuclear Applications. *His interest are in the fields of fast reactor design, fuel cycles, and reactor economics.*





MILLING TECHNOLOGY OF URANIUM ORES

The engineering, operating, and cost factors associated with milling uranium ores are reviewed, the effect of ore grade on recovery and operating costs are analyzed, and possible final mill products are discussed.

A. H. Ross (left) (BSc, Queen's University, Kingston, 1936) is Principal of A. H. Ross and Associates, Toronto, where, since 1954, he has been concerned with the recovery and processing of metals on four continents. His long and distinguished career in mining and metallurgy spans both production and management of numerous facilities. L. G. Guglielmin (BASc, University of British Columbia, 1951), a project engineer at A. H. Ross and Associates since 1964, has almost 20 years of mining and smelting experience as a research engineer and mill superintendent.

OPTIMIZATION OF IRRADIATION SCHEDULES

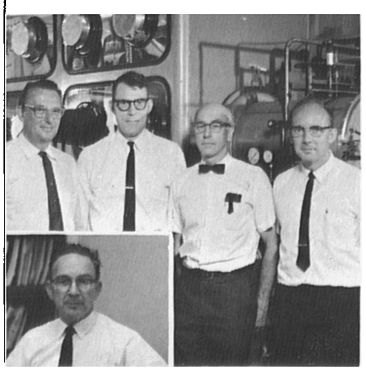
Radioisotope production schedules in a research reactor were optimized by comparing available irradiation volume with the theoretical volume for particular demands and by relating the theoretical volume to the volume required to duplicate radioisotopes available from other laboratories.

Armulfo Morales-Amado is Reactor Director at the Centro Nuclear de México, which will commence operations in early 1969 with a 1-MW TRIGA Mark III reactor and a 12-MeV Tandem accelerator. His PhD in nuclear engineering is from the University of Michigan. Señorita Ana María Martínez-Leal is Head of the Isotope Production Section. With a BSc in chemistry from the National University of México, she has isotope production experience gained at AECL (Toronto) and at the University of Salford (England).

DOSE RATE INFLUENCE ON THERMOCOUPLES

Thermocouple calibration was unchanged following a radiation level change from 7×10^{12} n/(cm^2 sec) and 7×10^6 R/h. Shifts of 2 to 4°C, at 10^{16} n/(cm^2 sec) and 10^{10} R/h are attributed to heating of the thermocouple bead and not to a thermoelectric power change in materials.

Gary J. Dau (seated) is Manager of Battelle Northwest's Electronic Measurements Research Section in the Applied Physics Department where he has been engaged in research on radiation effects since receiving his PhD in nuclear engineering (University of Arizona, 1965). R. R. Bourassa (PhD, Illinois, 1967) (right) and S. C. Keeton (PhD, Iowa State, 1966), senior research scientists in the Department, are concerned with theoretical and experimental studies in solid state physics.



HEATED TRANSFER TUBES FOR LIQUID METALS

Transfer tubes, made of Mo-30% W for use with molten metals and salts, were fabricated from gun-drilled and hot-bent bars, then joined with a threaded coupling.

I. O. Winsch, W. E. Miller, D. E. Grosvenor, and R. D. Pierce (left to right), and G. J. Bernstein (inset) are Associate Chemical Engineers in the Chemical Engineering Division at Argonne National Laboratory. They have worked together on various pyrochemical processing projects including development of transfer tubes, an outgrowth of fuel reprocessing for EBR-II.

GLOVEBOX FOR SPECTROPHOTOMETER

A glovebox system permits use of a standard spectrophotometer with either hot or cold solutions while keeping the instrument accessible for maintenance.

D. A. Gostanzo (right) is a chemist in the Method Development and Evaluation Laboratory of the Analytical Chemistry Division at ORNL. L. T. Corbin is an Assistant Director of the Division and leader of the Analytical Services Group.

THE EFFECTS OF GROUND ROUGHNESS

Roughness in the ground surface is shown to increase the protection factor of a structure more than would be estimated on the basis of the reduced intensity incident to the structure.

R. L. French (left) is a staff physicist and Vice President of Radiation Research Associates; he has been responsible for a number of innovations in shield analysis in the past fourteen years. J. H. Price is a senior physicist who has been involved in fallout shielding for several years.

MASS SPECTROGRAPHIC ANALYSIS OF SODIUM

Spark source mass spectrography provides a rapid and effective means for obtaining a multielement analysis of solid sodium down to parts per billion levels.

Edgar Berkey (center) (PhD, Cornell), a member of Westinghouse Research Laboratories' Physical Chemistry Department, is involved with the chemical role of impurities in liquid sodium. George G. Sweeney (left) (BS, Catholic University) specializes in spark source mass spectroscopy. William M. Hickam (MS, VPI) is Manager of Mass Spectrometry. All are involved with sodium research associated with Westinghouse's LMFBR program.

LEAKAGE RATE MEASUREMENTS

A leakage rate of 1.1 ± 0.2 liters/h into a contained volume of 152 m^3 (<0.02%/day) was determined in 41 h by first removing the oxygen from the contained volume and then measuring the change in oxygen partial pressure as air leaks in.

J. Kuypers, (right) (Chemical Engineer, Technical University, Delft, Netherlands), in charge of the Technological Group for development of the KEMA Suspension Test Reactor, specializes in oxygen-gas measurements by means of polarographic methods. J. P. Ruiter (Mechanical Engineer, Technical University, Delft) supervises the mechanical aspects of the group's activities.