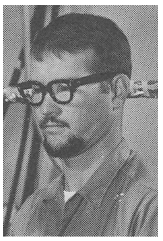
AUTHORS AND PAPERS

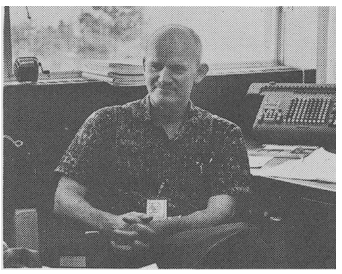
The highly condensed summaries of papers and technical notes (below) are intended to assist the busy reader in determining the order in which to read the technical material. Biographical comments are for human interest.



FLUID-BED FLUORIDE VOLATILITY

This third paper in a series of fluidized-bed fluoride volatility techniques examines decontamination factors, uranium and fission-product distribution, and uranium recovery from uranium-alloy fuels.

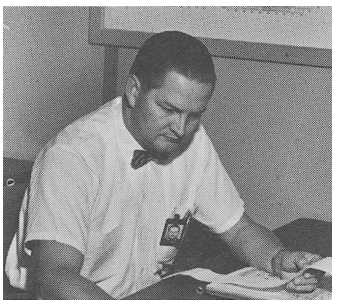
A. A. Chilenskas (left), has been engaged in engineering development of aqueous, pyrochemical, and fluoride volatility processing of nuclear fuels at Argonne National Laboratory for 14 years. K. S. Turner (MSc, University of New South Wales), with the Australian AEC Research Establishment since 1957, has extensive experience in fuel reprocessing, including several years at Argonne.



LOW CRITICAL MASS

A thick Be moderator has been shown to yield a minimum critical mass of only one-third of enriched fissionable fuel required for a water-reflected assembly.

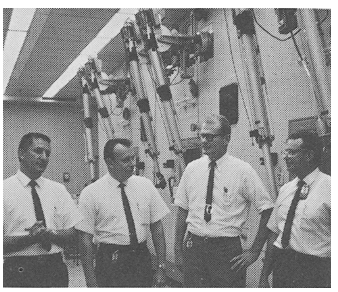
Carroll B. Mills, physicist, has been with Los Alamos Scientific Laboratory for eleven years. His major interest is in the correlation of measured reactivity, criticality, etc. with values calculated from transport theory and differential neutron cross sections.



NEUTRON SPECTRUM OF $^{238}PuO_2$

A ^{6}Li fast-neutron spectrometer is used to measure the neutron spectrum produced by a $^{238}PuO_2$ source.

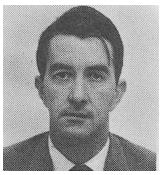
T. R. Herold, a research physicist at the Savannah River Laboratory with 15 years experience in the development and applications of nuclear instruments, has measured various nuclear radiations of the actinides. The present work uses his newly designed neutron spectrometer.

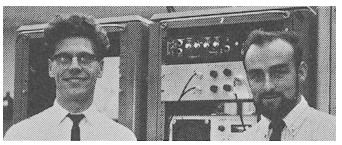


BeO-GRAPHITE COMPATIBILITY

BeO and graphite rings, held in close contact for nine months at 1500°C in a reactor, showed no gross radiation-induced physical damages.

The authors (left to right), are G. B. Engle, a chemist in the Metallurgy Division of GA, E. L. Long, responsible for hot metallography in the ORNL Metals and Ceramics Division, C. A. Brandon, a mechanical engineer in the ORNL Reactor Division, and D. R. Cuneo, a chemist in the ORNL Reactor Chemistry Division. Their work in materials development for the Gas-Cooled Reactor Project was a cooperative program between ORNL and General Atomic.

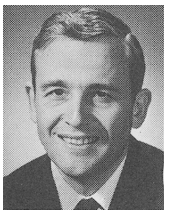




EPITHERMAL-NEUTRON MEASUREMENTS

Paired thick and thin foils measure epithermal-neutron flux spectra using a resonance activation technique. The results are compared to time-of-flight measurements.

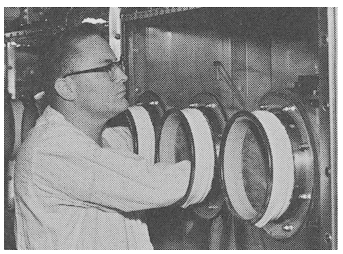
The authors work in the Nuclear Measurements Group of the Australian AEC, Physics Division. Group Leader John Connolly (BSc, Sydney University), shown singly, is currently on leave at the UKAEA, Winfrith, England. Terry Wall (left) formerly worked at the Winscale Works after receiving his BSc from Liverpool University. Alex Rose has published several papers on metal evaporator techniques. He joined the Commission from Scotland in 1960.



BUILDUP FACTORS FOR CONCRETES

Buildup factors for several concretes, determined by moments method calculations, agree with approximate evaluations, but only in the 3- to 6-MeV range.

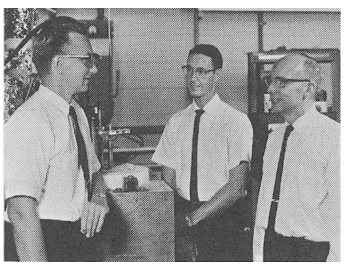
For a number of years, Francis H. Clark (left), has been involved in shielding research and design at Oak Ridge National Laboratory and elsewhere. He is now working in the area of reactor control. D. K. Trubey, manager of Oak Ridge's Radiation Shielding Information Center, has been involved in shielding and radiation transport research at ORNL since 1953.



CURIUM DETECTION BY AUTORADIOGRAPHY

Curium-244 is detected in solids by an autoradiographic technique wherein fission-fragment tracks are registered in glass and revealed by chemical etching.

W. C. Mosley (PhD, University of Alabama, 1965), a research physicist in the Isotope Fuels Group at SRL, is presently involved in characterization of isotopic heat source fuels.



LIQUID-LEVEL PROBE

An induction probe consisting of a bifilar Nichrome wire coil was developed to measure levels in liquid cadmium, bismuth, and sodium up to temperatures of 700°C.

T. R. Johnson (left) and F. G. Teats have developed techniques and equipment for pyrochemical recovery of nuclear fuels. R. D. Pierce (right), is leader of their group at ANL's Chemical Engineering Division. Johnson and Pierce have PhD's from the University of Michigan.

THERMAL CONDUCTIVITY OF PuO_2

The thermal conductivity of PuO_2, calculated from thermal diffusivity measurements using a heat pulse technique, is less than that of UO_2 and decreases with increasing temperature in $\approx 1/T$ relationship.

Shown (l to r) are Battelle (Columbus) personnel Daniel F. Askey, Associate Chief, Pu Technology and Materials Thermodynamics Division; Victor W. Storhok, Associate Chief, Environmental Engineering Division (EED); John E. Gates, Chief, EED; and John F. Lagedrost, Leader, Analytical Physics Division. Collectively, they represent 50 years of post-BS experience of which 46 years were with Battelle in such areas as Pu technology, reactor fuels, radiation effects, radioactive heat sources, high-temperature mechanical properties, shipping cask design, alkali metals, heat transfer, and reactor coolants.