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.

PRESSURIZED SUBCRITICAL FACILITY

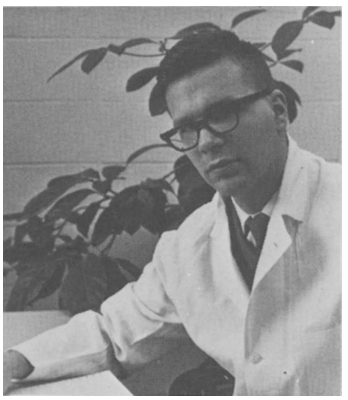
A pressurized subcritical facility, driven by neutrons from the General Electric Nuclear Test Reactor, was used to irradiate fully reflected lattices of plutonium-enriched fuel in H_2O, with k_{eff} of ≤ 0.98 at temperatures $\leq 540°F$.

John G. Carver (PhD, Yale University, 1955) is Manager of advanced research and technology at the Space Division of North American Rockwell. Previously, he was Manager of fuels and irradiations physics at GE's Vallecitos Nuclear Center where his research activities included plutonium recycle in light-water reactors.

FLOATING PLANTS FOR SEISMIC PROTECTION

Floating entire power plants on water can prevent seismic damage to large nuclear power stations. Types of barges suitable for off-shore locations are reviewed, and the cost of earthquake protection of a preferred design, which could be built with present technology, is established.

Harold M. Busey (PhD, Tulane University, 1948) is special assistant to the Director of Donald W. Douglas Laboratories of the McDonnell Douglas Corporation in Richland, Washington, where he directed the Laboratories' studies of earthquake protection for power stations. He formerly was Scientific Advisor to the Governor of New Mexico and, at Los Alamos Scientific Laboratory, was engaged in the design and safety of reactors.



FISSION-GAS HOLDUP BEDS

Mass transfer affects the removal of short-lived fission gases from an adsorbent bed in a way that can now be calculated. Ignoring such effects can cause the efficiency of a fission gas holdup bed to be greatly overestimated.

Dwight Underhill, a research associate at the Harvard University School of Public Health, received a BE degree (chemical engineering) from Yale in 1958 and his DSc degree from Harvard in 1967.

PREPARATION OF CURIUM-242 FOR SNAP-11

A 7.5-g pellet of ^{242}Cm, prepared from processing irradiated ^{241}Am by solvent extraction, conversion to the sesquioxide, pelletizing, and encapsulation, was used to fuel SNAP-11. This thermoelectric system generated 18 to 23 W in a 90-day simulated lunar environment test.

The chemical purification and ^{242}Cm recovery was the responsibility of ORNL's Chemical Technology Division where V. C. A. Vaughen (seated center) is group leader and W. T. McDuffee (left) supervises operations of the Curium Recovery Facility. E. Lamb (right) of the Isotopes Division coordinated fuel preparation and encapsulation, and R. A. Robinson of the same division was responsible for target preparation and testing of completed source.

ACTIVATION ANALYSIS BY COMPUTER

More than 60 elements in unknown samples have been rapidly identified by neutron activation analysis and by an on-line computer that displays the spectra and stores the information on magnetic tape. The system also makes routine quantitative measurements of a few elements.

C. J. Thompson joined Atomic Energy of Canada Ltd., Commercial Products after receiving his MSc from the University of Otago (New Zealand) in 1966. He is responsible for the development of both software and peripheral hardware for a computer controlled activation analysis system.

CAVITY SIZE DEPENDENCE

The size of a cavity formed by a nuclear explosion depends strongly upon the rock strength and less upon the ideal gas coefficient of the cavity gas, as previously believed. The rock strengths in field tests appear to be considerably lower than those observed in laboratory experiments, possibly due to shock wave cracking.

Robert T. Allen (right) (PhD, Purdue University, 1965) has studied the effects of near-surface nuclear bursts and used numerical techniques to study crater formations at Systems, Science, and Software. Russell E. Duff (PhD, University of Michigan, 1951), manager of the Applied Nuclear Company since 1968, was formerly associated with Lawrence Radiation Laboratory and LASL, working in the fields of detonation physics and material studies at high temperatures and pressures.

PLUGGING INDICATOR CHARACTERISTICS

The characteristics of a sodium system plugging indicator were studied by determining impurity nucleation characteristics at a bare orifice and by calculating mass transfer coefficients for Na_2O deposition on a partially plugged orifice.

Charles C. McPheeters (left) (MS, University of New Mexico) conducted the Na_2O cold trap studies that motivated the plugging indicator work, and John C. Biery (PhD, Iowa State University), the alternate group leader, investigated mass transfer phenomena in liquid plutonium alloys and sodium. The authors are members of the Engineering Support and Sodium Technology Groups of LASL's Reactor Division.

IRRADIATION OF EXPLOSIVES

Small samples (≤ 3.6 g) of explosives and propellants were irradiated in the General Electric Test Reactor in a capsule designed to contain an accidental detonation without damage to the reactor system.

W. E. Voreck (MS, University of Tulsa, 1947) heads the Physics Section in the Ordnance Research Division of Aerojet-General Corp. In addition to radiation effects studies, he has worked on a wide range of development in the field of explosives.

GAMMA-RAY BUILDUP FACTORS

In this, the third and final paper in a series, the gamma-ray buildup factors for sand, air, and wood, calculated by a moments method program, are reported.

Francis H. Clark, a staff member at ORNL for seven years, has engaged in shielding research and worked at the Radiation Shielding Information Center. His numerous papers and publications include a recent contribution to Advances in Nuclear Science and Engineering.