LETTERS TO THE EDITOR

ROTATING HOLDER FOR IRRADIATING SAMPLES

Dear Sir:

Because of flux gradients across irradiation facilities in a reactor, different parts of a large sample (or bundle of small samples) will receive different exposures, the average being unknown or difficult to determine with standards. For a position outside the reflector region of the Washington State University pool reactor, flux measurements made with copper wires revealed a 40% decrease across a 2-in. hydrogenous sample. A sample rotator, which holds six to eighteen 2-dram samples and rotates on a vertical axis, was constructed and tested for effectiveness in averaging the exposure.

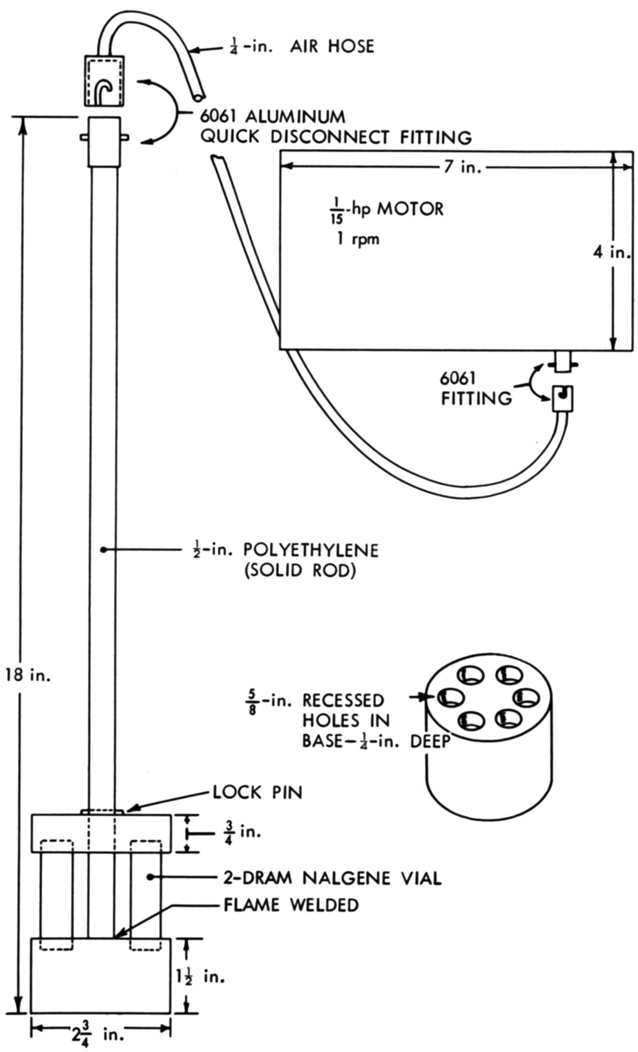

Fig. 1.

The sample rotator (Fig. 1) has been used successfully at the Washington State University pool reactor to irradiate simultaneously several small samples keeping variations in exposure to within less than counting statistics. The rotator has been reliable, is simple to construct and should be adaptable to all pool-type reactors.

The samples, first sealed in 2-dram polyethylene vials, are locked in a polyethylene sample holder. The sample holder is inserted into a 2.875-in.-i.d. aluminum irradiation tube that extends from the pool surface to the reactor core; the bottom of the irradiation tube has a square pedestal which plugs into the MTR-type grid box. The sample holder is rotated at 1 rpm by a $\frac{1}{15}$-hp motor located on the reactor bridge. The drive shaft, attached to the motor and sample holder by quick-disconnect fittings, is made $\frac{1}{4}$-in. air hose. The polyethylene sample holder is routinely replaced after 40 h use at 1 MW.

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FISSION PRODUCT DECAY HEAT

Dear Sir:

Decay heat from the fission of ^{235}U is a function of time at power and decay time. Figures 1 and 2 give the total decay heat (beta + gamma) from ^{235}U without further calculation. Figure 1, derived from Ref. 1 (Fig. 5), is a function of reactor operating time and decay time. Figure 2 is the burst curve from Ref. 1 (Figs. 3 and 4), and should be used when the decay time is >10 times the operating time. As an example, if a reactor had operated at 60 MW for ten days (8.64×10^5 sec) and we wish to determine the decay heat 10^5 sec (1.16 days) after shutdown, we obtain from Fig. 1 (2.4×10^{-3})