

Proj. 5000 -
 Docket 70-36

Mallinckrodt Chem. Works

12/30/58 Leaders - Johnston 12/30/58

As per discussion with Johnston, OK re difference K_{eff}
 Call suggested alt approach, U²³⁵ density as per TID-7016

5 gal storage in "55 Sherry"

5 gal spacing

Center to center = 24" ✓
 Edge to edge = 13 3/4" ✓

24 - 11 1/2" = 12 3/4" dia

Max. wt. 60 lb. UO₂ or less ref. U-235
 3-10% enr.
 50 units, circular array.

$\rho = 1.3 \text{ g/cc}$
 U content of UO₂ = 88.15%
 % H₂O = 0.2%

Center diam 22.5" dia x 26" H, 43 gal

$$Vol = \frac{.785(22.5)^2(26)}{1728} = 5.98 \text{ ft}^3 \quad 5.75 \text{ ft}^3$$

$$= 44.7 \text{ gal} \quad 43 \text{ gal}$$

For 10% enr.

From K = 1012, lim enr. = 6.8% UO₂

$$15 \times 400 = 6000 \text{ H/U-235} = \frac{.002 \times 6.8}{18/2} \times \frac{235}{0.6} = .59 \text{ wt } 0.6 \%$$

U-235 density in kindage = $0.6 / 5.75 = 0.12 \text{ kg/m}^3 \text{ (4.2/l)}$

I have, the 5 gal spacing and the 5 gal spacing

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