

Proj. 5000 -  
 Deck + 70-30

Mallinbrodt Chem. Works

12/30/58 Leaders - Johnson 12/30/58

As per discussion with Hamilton, OK re design and K<sub>off</sub>  
 Call suggested alt approach, U<sup>235</sup> density as per TID-7016

5 gal slown in "55 Shanty"

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. UO<sub>2</sub> or less w/ U<sup>235</sup>  
 3-10% enr.  
 50 unit, critical array.

ρ = 1.3 to 1.6 g/cc  
 U content of UO<sub>2</sub> = 88.15%  
 % H<sub>2</sub>O = 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 = 0.454 → 0.4 kg U<sup>235</sup>

$$15 \times 100 = 1500 \text{ H/U-235} = \frac{.002 \times 6.8}{18/2} \times \frac{235}{0.6} = .59 \text{ wt } 0.6 \text{ U}$$

U-235 density in kindage = 0.6 / 5.75 = 0.12 kg/m<sup>3</sup>. (4.9/l)

I have, etc. ...

... 4.9 lb/ft<sup>3</sup> ...