

U. Mass. 7/1/61

11-17-61

725 2-6-62

htc 2-6-62

154.0

C: 3.3 x 10<sup>23</sup> 26.7% 20.1/100

Net wt = 15 x 32.7 = 490 lb.

Wt U = 490 x 0.88 = 431 lb. Corresponds to 1.7% enrichment

Wt U = 2.5% 2.5% x 0.17 / 2.2 = 2.72% 2.72% x 1500 min. x 2.0 = 54.4 <sup>max</sup> / 1000

To 3% enrichment

M<sub>2</sub> = 900 U

= 24.3% = 102.3 H. U =

Vol U<sub>2</sub> = 102.3 / 26.7 = 3.84 gal

For 215 <sup>gms wt.</sup> <sup>100%</sup> <sup>200 lb U<sub>2</sub></sup> Vol = 200 / 26.7 = 7.5 gal.

M<sub>2</sub> U = 200 x .88 = 176 lb. Corresponds to 2.2 % enr.

Soil angles for shipment of uranium metal 7/1/62

1. Assume drums are full
2. Max. of 50 drums, 2 drums of 11 drums each in truck
3. Drums are not stacked
4. Drums 1500 lb, 16" dia x 18" high
5. Package, 3'6" x 3'6" x 3'5" high

Conclusions: a. In which Muller's calc. - see 2/6/62 letter

b. My calc are in general agreement with Muller's, but somewhat low. See reasons given on p. 2

c. Recommended approval of 2-6-62 3/7/62

6-85

REF: METHOD OF K-1309 CURVES

REF: UNINDC - AMM.  
11-17-61  
TWX 2-6-62  
LTR 2-6-62

REFER TO SKETCH OF 22 UNIT ARRAY IN TRUCK

SCALE:  $\frac{1}{4}'' = 1'$

DIA = 16" (1.33') } 15 gal. inner coat.  
HT = 19" (1.5')

FROM DRUM # 0 TO	SUB 8" 8' .7'	SUB 16" 12 1.3'	ETOE	$\frac{ETOE}{DIA}$	$\frac{HT}{DIA}$	$\bar{v}$	$\Omega$ = $4\pi \bar{v}$	* M
	CTOC	CTOE	ETOE					
1 & 1'	3.6'	2.9'	2.3'	1.73	1.12	.0170	.214	.244
2	4.1'	3.4'	2.8'	2.10	"	.0128	.214	.244
3 & 3'	5.5'	4.8'	4.2'	3.16	"	.0061	.076	.109
4 & 4'	8.3'	7.6'	7.0'	5.26	"	.0026	.032	.039
5 & 5'	11.6'	10.9'	10.3'	7.75	"	.0013	.016	.018
6 & 6'	14.9'	14.2'	13.6'	10.2	"	.0006	.007	.010
7 & 7'	19.3'	17.6'	17.0'	12.8	"	.0003	.004	.005
							.863	1.094

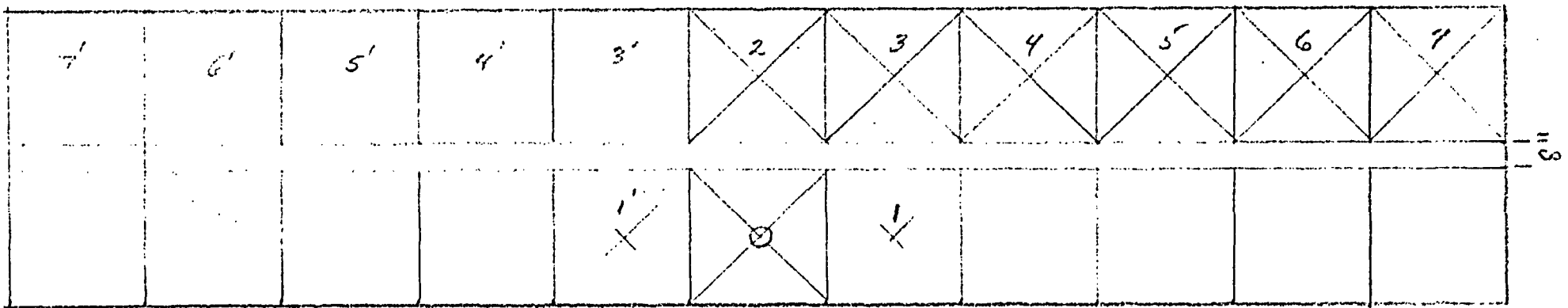
\* MALLINCKRODT SOMEWHAT HIGHER IN COMPUTED SOLID ANGLE BECAUSE:

.916

(1) Method of K-1309 is non-conservative by as 5% in this range (Values of  $\Omega$  too low in comp. with  $\frac{2d \sin \theta}{r}$ )

NO | (2) I used ~~3' 7" side dimension of linkage~~ (in TIV-1011) whereas Mill used ~~5' 6"~~ used 6"

(3) I assumed cages along sides of truck (see sketch) with 8" blocks separating rows. Makes  $\Omega$  to 2, 3, 4, 5, 6 and 7 a little lower. To drums 1 and 1' I reversed to no cage sep., giving  $\Omega = .916$



$$1/4'' = 1'$$