

U. Mass. T. 101

11-17-61

725 2-6-62

htr 2-6-62

15 gal

C₂ 3.3 x 1.3 = 26.7 lb. 200/100

Net wt = 15 x 3.3 = 400 lb.

H₂O = 400 x 0.88 = 352 lb. Corresponds to 1.7% air in fuelH₂ = 2.5 lb. 725 x $\frac{0.17}{2.2} = 2.72$ lb. 288/1500 air = 2.0 = 54.4 $\frac{\text{Kcal}}{\text{lb. H}_2}$

To 3% air in fuel

M₂ = 900 lb= 24/3 = 102.3 lb. H₂O =Vol H₂O = 102.3 / 26.7 = 3.84 galFor 2.15 $\frac{\text{lb. H}_2}{\text{lb. fuel}}$, or 200 lb H₂O Vol = 200 / 26.7 = 7.5 gal.H₂O = 200 x 0.88 = 176 lb. Corresponds to 2.2 % air.

Solid angles for shipment of propane - 70 x 2/6/62

1. Average drum - full

2. Max. of 50 drums, 2 drums of 11 drums each in truck

3. Drum - not stacked

4. Drum 1500 lb, 16" dia x 18" high

5. Package, 3'6" x 3'6" x 3'5" high

Conclusions: a. I checked 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. It is recommended approval of 2-6-62 3/7/62.

6-85

REF: METHOD OF K-1309 CURVES

REF: UNDOC - MALL.

11-17-61

THX 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 gallo. inner conf.
HT = 18" (1.5')

FROM DRUM ± 0 TO	SUR 8" 8' .7'	SUR 16" 12 1.3'	ETOE DIA	λ $\frac{HT}{DIA}$	\bar{v}	Ω $= 4\pi \bar{v}$	*
CTOC	CTOE	ETOE					M
1 & 1'	3.6'	2.9'	2.5'	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'	18.3	17.6'	17.0'	12.8	"	.0003	.004 .005
							.863 1.094

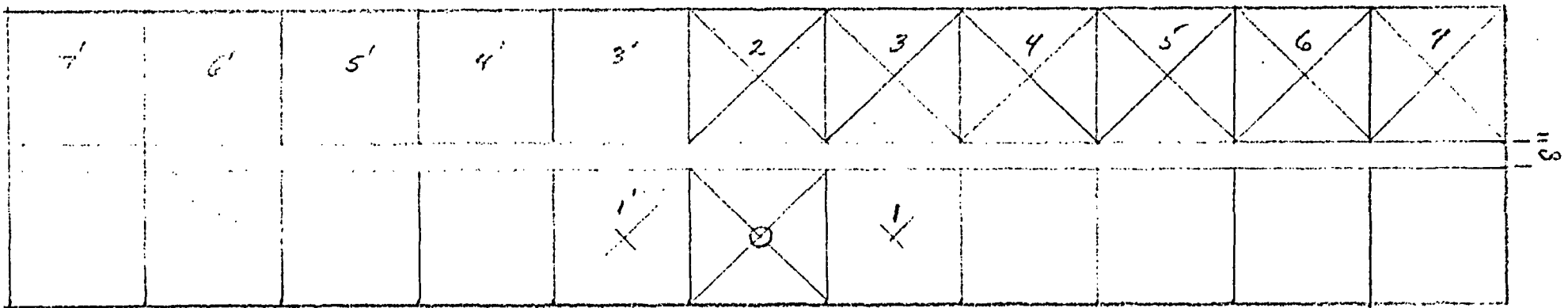
* MALLINCKRODT SOMEWHAT HIGHER IN
COMPUTED SOLID ANGLE BECAUSE:

.916

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

no (2) I used 3' 7" as side dimension of package
(in TIV-1011) whereas Mall used 3' 6" used 6"

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



$$1/4" = 1'$$