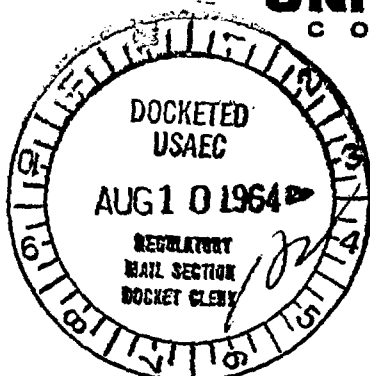


**UNITED NUCLEAR  
CORPORATION**

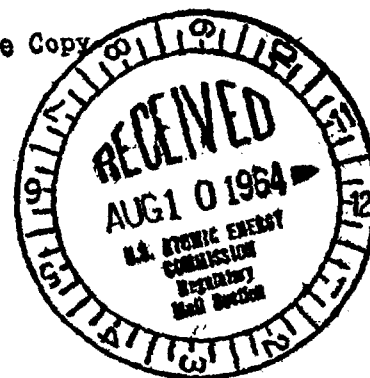
AUGUST 6, 1964

HEMATITE, MISSOURI 63047  
TELEPHONE 314-937-2575



DOCKET NO. 70-820

File Copy



MR. DONALD A. NUSSBAUMER  
U.S. ATOMIC ENERGY COMMISSION  
DIVISION OF LICENSING AND REGULATION  
ST. ELMO AND NORFOLK STREETS  
BETHESDA, MARYLAND

SUBJECT: SNM-777 LICENSE FOR FUELS RECOVERY PLANT,  
WOOD RIVER JUNCTION, RHODE ISLAND

GENTLEMEN:

WE ARE RESPECTFULLY REQUESTING AMENDMENT OF SNM-777 TO INCLUDE A REVISION TO THE STORAGE ARRAY DESCRIBED IN PARAGRAPH 504.3 OF "GENERAL INFORMATION AND PROCEDURES APPLICABLE TO THE HANDLING OF SPECIAL NUCLEAR MATERIAL". THE ONLY CHANGE IN THE ARRAY IS THE HORIZONTAL SPACING OF INDIVIDUAL CONTAINERS---THE ORIGINAL SPACING OF 32" CENTER TO CENTER BEING REDUCED TO 16" CENTER TO CENTER.

A REVISED SKETCH OF THE ARRAY AND SOLID ANGLE CALCULATIONS ARE SUBMITTED HERewith FOR YOUR REVIEW AND APPROVAL. YOU WILL NOTE THAT THE SOLID ANGLE CALCULATED FOR THE ENTIRE ARRAY IS 2.56 STERADIANS. THIS INCLUDES THE SOLID ANGLE SUBTENDED AT THE CENTRAL UNIT BY ALL THE NUMBERED UNITS ON THE SKETCH. HOWEVER, ONLY UNITS NUMBERED 1, 2, 3, 4 AND 7 ARE "VISIBLE" TO THE CENTRAL UNIT. THE SOLID ANGLE IN THIS CASE IS ONLY 2.10 STERADIANS. AS DESCRIBED IN PARAGRAPH 504.3, THE SAFE SOLID ANGLE IS 3.0 STERADIANS.

YOUR EARLY REVIEW AND APPROVAL IS RESPECTFULLY REQUESTED.

RESPECTFULLY YOURS,

L. J. SWALLOW,  
OPERATIONS CONTROL MANAGER

LJS:JB  
ENC.  
AEC: 6

Copy Supplied

Public Document Room  
Reg. of Compliance (2)

LUKE

ACKNOWLEDGED

C-5

4113

INSIDE STORAGE FACILITIES  
STORAGE SHELVES (REF. PARAGRAPH 504.3)

SOLID ANGLE SUBTENDED AT CENTER BOTTLE BY:

1. TWO # 1 BOTTLES

$$H = 13 \quad H/A = 2.167$$

$$A = 6 \quad H/B = 1.300$$

$$B = 10 \quad \Omega = .325$$

$$2\Omega = .650$$

2. TWO # 2 BOTTLES

$$H = 15 \quad H/A = 2.50$$

$$A = 6 \quad H/B = 2.50$$

$$B = 6 \quad \Omega = 1.55$$

$$2\Omega = .310$$

3. FOUR # 3 BOTTLES

$$H = \sqrt{(15)^2 + (13)^2} = 19.8$$

$$A = 6 \quad H/A = 3.30$$

$$B = 11.7 \quad H/B = 1.69$$

$$\Omega = .171$$

$$4\Omega = .684$$

4. FOUR # 4 BOTTLES

$$H = 32.6 \quad H/A = 5.43$$

$$A = 6 \quad H/B = 2.79$$

$$B = 11.7 \quad \Omega = .065$$

$$4\Omega = .260$$

5. FOUR # 5 BOTTLES

$$H = 47.4 \quad H/A = 7.900$$

$$A = 6 \quad H/B = 4.05$$

$$B = 11.7 \quad \Omega = .032$$

$$4\Omega = .128$$

6. FOUR # 6 BOTTLES

$$H = 62.8 \quad H/A = 10.47$$

$$A = 6 \quad H/B = 5.37$$

$$B = 11.7 \quad \Omega = .018$$

$$4\Omega = .072$$

7. FOUR # 7 BOTTLES

$$H = 37.3 \quad H/A = 6.22$$

$$A = 6 \quad H/B = 3.19$$

$$B = 11.7 \quad \Omega = .050$$

$$4\Omega = .200$$

8. FOUR # 8 BOTTLES

$$\begin{aligned} H &= 57 & H/A &= 9.50 \\ A &= 6 & H/B &= 4.87 \\ B &= 11.7 & \Omega &= .022 \end{aligned}$$

$$4\Omega = .088$$

9. FOUR # 9 BOTTLES

$$\begin{aligned} H &= 78.4 & H/A &= 13.1 \\ A &= 6 & H/B &= 6.70 \\ B &= 11.7 & \Omega &= .012 \end{aligned}$$

$$4\Omega = .048$$

10. FOUR # 10 BOTTLES

$$\begin{aligned} H &= 84.6 & H/A &= 14.10 \\ A &= 6 & H/B &= 7.23 \\ B &= 11.7 & \Omega &= .010 \end{aligned}$$

$$4\Omega = .040$$

11. FOUR # 11 BOTTLES

$$\begin{aligned} H &= 94.2 & H/A &= 15.7 \\ A &= 6 & H/B &= 8.05 \\ B &= 11.7 & \Omega &= .008 \end{aligned}$$

$$4\Omega = .032$$

12. FOUR # 12 BOTTLES

$$\begin{aligned} H &= 114.5 & H/A &= 19.1 \\ A &= 6 & H/B &= 9.79 \\ B &= 11.7 & \Omega &= .005 \end{aligned}$$

$$4\Omega = .020$$

13. FOUR # 13 BOTTLES

$$\begin{aligned} H &= 110 & H/A &= 18.3 \\ A &= 6 & H/B &= 9.4 \\ B &= 11.7 & \Omega &= .006 \end{aligned}$$

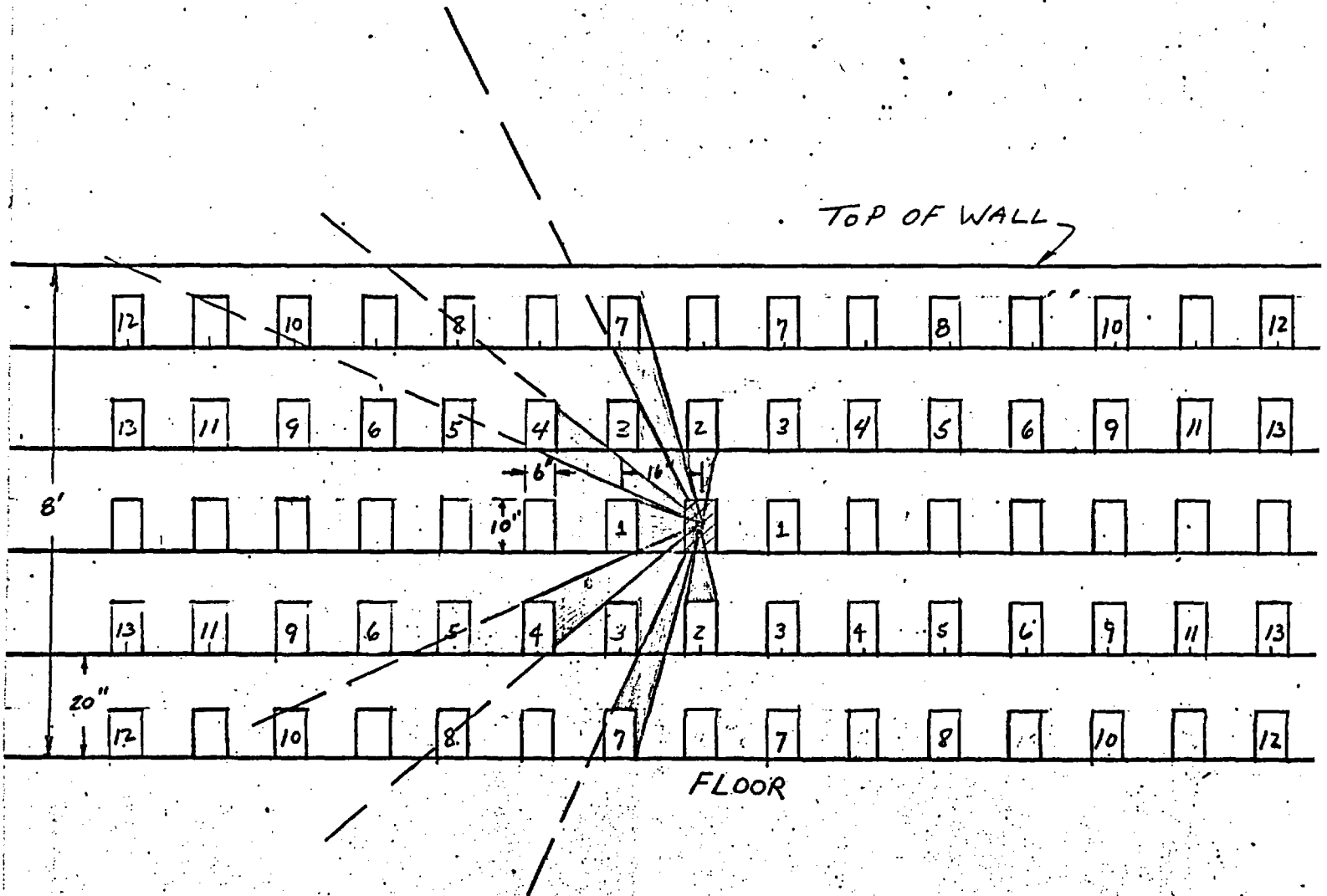
$$4\Omega = .024$$

GRAND TOTAL 2.556

TOTAL FOR BOTTLES 1, 2, 3, 4, 7 IS 2.104 STERADIANS.

THE ABOVE CALCULATIONS WERE MADE ON AN OAK RIDGE GASEOUS DIFFUSION PLANT  
SOLID ANGLE SLIDE RULE.

INSIDE STORAGE SHELVES.  
REF. PARAGRAPH 504.3



8/6/64