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NUCLEAR REGULATORY COMMISSION
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Docket File
70-687

Docket No. 70-687

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MEMORANDUM FOR: L. C. Rouse, Chief
Advanced Fuel and Spent Fuel
Licensing Branch
Division of Fuel Cycle and
Material Safety

FROM: R. G. Page, Chief
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

SUBJECT: REVIEW OF LICENSE APPLICATION DATED AUGUST 20, 1981,
DOCKET NO. 70-687

I. Background

The Union Carbide Corporation, Medical Products Division (UCC), by application dated August 20, 1981, requested authorization to store ≤ 350 g contained ^{235}U in each of the 100 storage cavities in their new waste storage facility.

II. Discussion

UCC has constructed a new waste storage facility for the storage of radioactive waste in 55-gallon drums containing ≤ 350 g ^{235}U /drum. The drums are to be positioned in 28-inch diameter cavities located in a triangular pitch honey-comb matrix in concrete with a 38-inch center-to-center spacing between cavities.

The 350 g ^{235}U limit/drum is safe independent of the degree of water moderation within the drums and independent of the concrete reflector thickness surrounding the drums. An infinite, single-plane array of loaded drums is safe. The surface density of fuel in the array is 74 g $^{235}\text{U}/\text{ft}^2$ compared to the maximum safe density of 200 g $^{235}\text{U}/\text{ft}^2$ (see report by R. L. Stevenson and R. H. Odegarden, "Studies of Surface Density Spacing Criteria Using KENO Calculations," ANS Transactions, November 1969). Therefore, the array is safe from a nuclear criticality safety viewpoint.

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