



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Docket No. 70-687

OCT 23 1981

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. Odegaarden, "Studies of Surface Density Spacing Criteria Using KENO Calculations," ANS Transactions, November 1969). Therefore, the array is safe from a nuclear criticality safety viewpoint.

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

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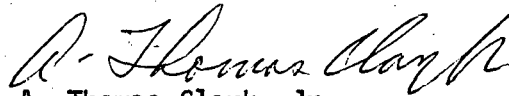
MEMORANDUM FOR: Wendy W. Ting
Advanced Fuel and Spent Fuel Licensing Branch
Division of Fuel Cycle and Material Safety

FROM: A. Thomas Clark, Jr.
Advanced Fuel and Spent Fuel Licensing Branch
Division of Fuel Cycle and Material Safety

SUBJECT: RADIATION PROTECTION ASPECTS OF THE NEW WASTE
STORAGE AREA AT STE LING FOREST

During the site visit referred to in my trip report, dated October 13, 1981, we were shown the new waste storage facility being prepared by Union Carbide. Mr. Voth, licensing manager for Union Carbide at Sterling Forest, described to me in some detail the equipment and procedures to be used to limit radiation exposures. A special fork lift truck with shielding is used to center and lower the waste containers into the storage holes. Union Carbide performed analysis of possible radiation scatter during the loading and unloading operations:

Based on my direct observation and discussions with Mr. Voth I believe that the radiation protection provided to the workers will be adequate. This, coupled with an analysis under as low as reasonably achievable principles during our review and evaluation for the Union Carbide license renewal application, should be sufficient to conclude that the health and safety of employees is adequately protected.



A. Thomas Clark, Jr.
Advanced Fuel and Spent Fuel
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