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SNM-639

AUG 20 1985

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MEMORANDUM FOR: A. T. Clark  
Advanced Fuel and Spent Fuel Licensing Branch  
Division of Fuel Cycle and Material Safety, NMSS

FROM: Norman Ketzlach  
Uranium Process Licensing Section  
Uranium Fuel Licensing Branch  
Division of Fuel Cycle and Material Safety, NMSS

SUBJECT: REVIEW OF LICENSE AMENDMENT APPLICATION DATED JUNE 25, 1985

Background

Union Carbide Corporation (UCC), by application dated June 25, 1985, requested authorization to modify the nitric acid acceptance test requirements for the raschig rings used in glass SNM solution storage containers used in the Isotope Processing Cell. Currently, the acceptance test limits the weight loss to the rings to 0.010 percent. UCC has experienced weight losses of a maximum of 0.07 percent and requests the acceptance test limits be increased to a maximum of 0.1 percent.

Discussion

UCC has applied the ANSI/ANS-8.5-1979 Standard, "Use of Borosilicate-Glass Raschig Rings as a Fixed Neutron Absorber in Solutions of Fissile Material," to its specific use which is on a very small-scale compared to the normal use of the standard. Normally, the rings, having a maximum outside diameter of 1.5 inches, are used to fill larger vessels (maybe in the 100's-1,000's of gallons in size). UCC uses very small rings in SNM solution storage containers having a volume 250 ml. The rings have the same composition and occupy the same fractional volume of these containers as do the larger rings in the industrial-size vessels. The standard specifies the rings shall be inspected for settling, solids accumulation, and determining their physical and chemical properties. The rings shall be checked at least once in 13 months for those applications in which: (1) there is no agitation of the rings, and (2) the rate at which the solution is concentrated by evaporation does not exceed 10 percent per year. For those applications in which the rings are agitated, the interval between inspections for settling shall not exceed 7 months. At UCC, each batch of solution is stored no longer than 60 days, and the raschig rings in

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any container are used only once. The small quantity of B-10 (<0.1 percent) that may be dissolved from the rings would remain in solution in the container. Therefore, the ratio of B-10 to U-235 in each container would remain the same. Since the rings are not re-used, the degree of solution poisoning remains unchanged in each succeeding batch. Therefore, authorizing an increase in the dissolution of the rings will not compromise nuclear criticality safety, and granting the requested authorization is recommended.

Original Signed By  
 N. Ketzlach

Norman Ketzlach  
 Uranium Process Licensing Section  
 Uranium Fuel Licensing Branch  
 Division of Fuel Cycle and  
 Material Safety, NMSS

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