

SGTB:HWL
71-5939


December 7, 1989

MEMORANDUM FOR: Nancy Osgood, SGTB, NMSS
FROM: Henry W. LEE, SGTB, NMSS
SUBJECT: MODEL 1500 SHIPPING PACKAGE
CESIUM CHLORIDE CONTAINMENT

By application dated August 5, 1989, and as supplemented August 28, November 20, 1989, Chem-Nuclear Systems, Inc. (CNSI) requested an amendment to the C. of C. 71-5939 for shipment of a Cesium Chloride Canister for the Model No 1500 Shipping Package.

The application uses a combination of analysis and the results of full scale testing to show that the Cesium Chloride Canister is structurally acceptable. Thirty foot drop tests of a full scale prototype canister without the protection of the Model 1500 packaging were performed to demonstrate the ability of the canister to withstand the 30 ft. drop impact condition. Detailed analyses were performed to address differential thermal expansions of the canister wall and the canister closure bolts for both the normal transport and the hypothetical accident conditions. The results have shown that the bolt stress will remain below the yield stress.

Prior to first use of any canister, the applicant proposed to perform three 30 ft. drops (top, bottom and side) and leak test before and after each drop in accordance with the requirements of ANSI Standard N14.5-1987. However, to simulate increased closure bolt stress due to differential thermal expansion, the applicant proposed to increase the closure bolt torque from 80 ft-lb to 117 ft-lb. The increase in torque provides more preload to seal the canister. Thus, it actually helps the canister to resist impact load produced by the 30 ft. drops. It would be more conservative and desirable not to increase the bolt torque for the first time use structural test.


Henry W. Lee

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