

**Meeting Handout for Amendment No. 5 to Certificate of Compliance No. 1032 for the HI-STORM
Flood/Wind Multi-Purpose Canister Storage System
Docket No. 72-1032
Summary of Technical Issues**

Technical Issue in Confinement Analysis

Holtec proposed to add an alternative vent and drain port cover configuration using dual closures. Each weld seam is subject to penetration testing (PT) examination with acceptance criteria of a clean PT and volumetric testing. Holtec also proposed to remove the helium leak rate testing requirement for the alternative vent and drain port cover configuration. Holtec indicated that in this alternative configuration, the vent and drain penetrations provide four independent barriers against leakage of helium, namely:

1. The Mechanical seal installed by the RVOA
2. The inner lid and its closure circumferential weld
3. The outer lid and its closure circumferential weld
4. The Lid Closure Ring and its peripheral welds.

Regulatory Basis

(Title 10 of the *Code of Federal Regulations* (10 CFR) 72.236 (d), 72.236 (j), and 72.236 (l)).

Safety Basis

Demonstrate the cask will reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions. (10 CFR 72.236(l))

Casks should be designed and tested to be “leak tight” as defined in ANSI N14.5, American National Standard for Leakage Tests on Packages for Shipment of Radioactive Materials. (NUREG-1536, ISG-25)

Staff's Technical Position

NUREG-1536 and ISG-25 provide guidance for evaluating the helium leakage testing and ASME Code required pressure (hydrostatic/pneumatic) testing that is specified for the dry storage system confinement boundary. Both documents refer to ANSI N14.5 for guidance on leakage rate testing. ANSI N14.5 calls for leakage rate test of the entire confinement boundary, including base material, welds, seals, closures, valves, rupture disks, or other boundary elements. In addition, ANSI N14.5 does not allow for the elimination of leakage rate testing based on the use of multiple barriers.

ISG-25 identifies various tests to meet the regulatory requirements and notes that each test serves a different function. For example, the volumetric and surface examinations of welds ensure that the welds comply geometrically with the design requirements, but can only detect flaws of a minimum size. The ASME Code pressure test provides additional assurance that the component has been properly fabricated by stressing the component to a minimum Code required loading. The helium leakage test assures there are no flaws or leak paths that could result in significant release of the helium environment and radioactive contents. The weld examinations, pressure test, and helium leakage test are not considered equivalent substitutes for each other. ISG-25 also notes that, at this time, the staff does not have sufficient data to generically grant an exception of leak testing of base material that may be procured, fabricated, and operated under various conditions for multiple types of dry storage systems.

Consistent with established guidance it is the staff's position that *the entire confinement boundary needs to be leak tested with the new design to meet the regulatory requirements and that no alternative presented to date justifies replacing the helium leak test to assure no flaws or leak paths that could result in significant release of the helium environment and radioactive contents.*