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Date: 10/24/05 12:18PM
Subject: Justification for No "Leak-Tight" Test for 32PTH Vent/Siphon Cover Plates

Chris/Joe:

For the NUHOMS DSCs that TN has licensed since 2000 (61BT, 32PT, 24PHB, and 24PTH in CoC 1004), we have tested the entire top inner cover plate pressure boundary, including the siphon and vent cover plate plates, to the ANSI N14.5 leak tight requirements of 1×10^{-7} leakage. These requirements are reflected in CoC 1004 Technical Specification 1.2.4.a also. Each of the canisters loaded under this CoC has met this requirement with success and without any rework of the vent and siphon cover plate welds.

One major reason why NUHOMS DSCs have experienced this success is that the DSC cavity pressure is extremely low during the welding of the silver dollars (slightly above atmospheric pressure). This low pressure minimizes leakage potential through the swage lock fittings of the siphon and vent penetrations. (Please note that as stated in Chapter 4 of the SAR, the expected normal operating pressure for 32PTH DSC is approx 5.0 psig).

In addition, we fill the cavity under the silver dollars with helium prior to the weld of the silver dollars. Finally, the weld size of the silver dollars is the same as the inner cover plate weld and the welds are applied using a multiple layer technique with a multiple level PT in accordance with ASME Code Case N-595-3.

Thus the NUHOMS DSCs have been designed with certain unique features which preclude problems experienced by other competing Casks on the market when being tested to ANSI N14.5 leak-tight requirements.

If the staff agrees, we can add the above justification in SAR Chapter 7 as to why the leak tight testing of the inner top pressure boundary weld, including the silver dollar welds, is not required.

However, to provide added assurance, we propose to add words in SAR Chapter 7 that although not required based on the justification provided, TN commits to perform a leak tight test of the entire inner pressure boundary as an option. This precludes the need to add this leak-tight testing requirement of the siphon/vent cover plates to the TS.

Finally, we propose to replace the justification in TS 4.4.3 Table (DSC ASME Code Alternatives) to say that "the inner top cover shield plug is pressure tested in accordance with ASME Code Case N-595-3", since Code Case N-595-3 allows leak testing to 10^{-4} leakage rate in-lieu of pressure testing.

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