Public Meeting with Holtec on June 7, 2017

Meeting Handout for
Amendment 3 to Certificate of Compliance No. 1008 for the
HI-STAR 100 Canister Storage System
Docket No. 72-1008
Summary of Thermal Analyses Issues

Summary

By letter dated September 25, 2015, Holtec International (Holtec) submitted a request to amend Certificate of Compliance No. 1008 for the HI-STAR 100 Dry Storage Cask System. The amendment request seeks to revise the certificate to include the MPC-32 canister as authorized contents of the HI-STAR 100 Storage System, and to authorize storage of the HI-STAR 100 Storage System in a horizontal orientation, among other changes.

On March 23, 2016 staff issued a Request for Additional Information (RAI), to which Holtec submitted a response on April 29, 2016. The staff has reviewed Holtec's responses to the staff's RAI and identified several issues that require supplementation by Holtec. The staff has summarized the issues requiring supplementation below:

Main Technical Issues:

Additional details about information to be incorporated by reference:

In its application and RAI response, Holtec seeks to incorporate by reference the thermal analyses from the Safety Analysis Report (SAR) for the HI-STAR 100 Transportation Cask System. However, Holtec does not provide the specific version or revision of the HI-STAR 100 Transportation Cask System SAR that it seeks to incorporate by reference, nor does it specify the specific sub-sections, chapters, or supplemental analyses that it intends to rely on to demonstrate compliance with Part 72 storage requirements. The staff needs clear and specific discussions, explanations, and/or justification within the HI-STAR 100 Storage Cask System FSAR that show how the transportation thermal analysis are used to demonstrate compliance with storage requirements and specifically indicate which portions of the thermal analyses from the transportation SAR are used to support the analysis of normal, off-normal, and accident conditions of storage.

Additional descriptions of the horizontal storage emplacement structure:

In its amendment application, Holtec requested authorization to store the HI-STAR 100 Cask System in a horizontal orientation. In its RAI, staff sought additional design information for the emplacement structure to be used to maintain the cask in a horizontal orientation. In its response, Holtec stated that this structure is considered not important to safety because it has analyzed the effect of cask drops from a height higher than the proposed height of the horizontal emplacement structure. However, Holtec did not discuss or evaluate the effects that this horizontal emplacement structure may have on the thermal performance of the cask. Holtec should supplement their response, either through additional design drawings, descriptions, thermal analyses, or more specific incorporation by reference, to address how the horizontal emplacement structure does or does not affect the thermal performance characteristics of the storage cask.

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Additional information about the effects of cask arrays in horizontal orientation:

The approved HI-STAR 100 Storage Cask System FSAR only provides a cask array pitch or minimum center-to-center spacing for casks on a vertical orientation. In its amendment application and RAI responses, Holtec states that it intends to determine the minimum distance for casks placed in a horizontal orientation on a site-specific basis. The staff needs additional discussion and results of the thermal analysis that addresses the thermal interaction among casks in an array that ensures the cask array pitch or center-to-center spacing is bounding for all cask contents/baskets, considers the most bounding combination of vertical and/or horizontal cask orientation, and provides justification for the most bounding combination of vertical and/or horizontal cask orientation.

Additional information about the MPC-68 thermal analyses used to bound the transfer and vertical storage and transfer operations for the MPC-32 canister in the HI-STAR 100 overpack:

The applicant provided a similarity argument stating that because the thermal analyses for the HI-STORM 100 Cask Storage System (CoC No. 1014) demonstrate that the MPC-68 bounds the MPC-32 in the HI-TRAC transfer cask, then a similar result will be expected for the HI-STAR 100 overpack and that the MPC-68 will bound the MPC-32. The complexity of these systems does not lend themselves to this type of comparison provided in the proposed FSAR Chapter 4. The staff needs additional descriptions, thermal analyses, or more specific incorporation by reference, that demonstrate how the thermal analyses for a MPC-68 canister loaded in the HI-STAR 100 overpack bounds the MPC-32 canister loaded in the same overpack.