

Request for Additional Information

Docket No. 72-1014

Certificate of Compliance No. 1014

Amendment No. 15 to the HI-STORM 100 Multipurpose Canister Storage System

Chapter 4 - Thermal Evaluation

- 4-9 Provide a technical justification demonstrating how low-wind speeds impact the PCT or other components important to safety.

Section 4.II.0 of the FSAR states that Version E overpack features a large axi-symmetric outlet opening with substantially larger outlet flow area than the prior model overpacks currently in use to ensure that it will reject more heat than the prior modes regardless of the MPC model stored inside it. Normal low-speed wind could affect the cask thermal performance, specifically in the HI-STORM 100 systems, because of the larger axi-symmetric outlet opening resulting in higher predicted temperatures compared to quiescent conditions, by blocking the air vents, which could have an impact on the cooling effect by reducing the mass flow rate through the annular gap. This can be demonstrated by performing sensitivity calculations based on a range of wind speeds which is typically considered normal (in the range of 0 to 15 miles per hour) in order to obtain bounding speed. A three-dimensional model that includes an extended domain to represent the surrounding environment is generally used for wind studies to obtain accurate results (see NUREG-2174 "Impact of Variation in Environmental conditions on the thermal performance of Dry Storage Casks" for additional information). The staff needs this information to have assurance predicted temperatures remain below allowable limits during long term storage.

This information is needed to determine compliance with 10 CFR 72.236(b) and (f).

Holtec Response:

To address the regulator's concern, sensitivity studies were performed to evaluate the impact of low-speed wind on the thermal performance of HI-STORM 100 Version E system. A [Proprietary Information withheld in accordance with 10 CFR 2.390] is constructed by modifying the licensing basis model described in Section 4.II.4.1 of the FSAR, to include the air volume around the cask. Steady state evaluations were performed for windspeeds of [Proprietary Information withheld in accordance with 10 CFR 2.390].

It is concluded from the sensitivity studies that low speed wind has an insignificant impact on the peak cladding temperature (PCT), HI-STORM/MPC component temperatures and MPC cavity temperatures. The maximum impact on PCT [Proprietary Information withheld in accordance with 10 CFR 2.390]. with the PCT decreasing with further increase in wind speeds.

The evaluations and results are documented in Appendix R of Report HI-2043317R41. Subsection 4.II.4.8 of the HI-STORM 100 FSAR was revised to include a summary of the

effects of low-wind. Appendix R of HI-2043317R41 is included as Attachment 4 with supporting calculation files as Attachment 5 to this response.

Request for Supplemental Information

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Materials – RAI 8-1

- 1. Please provide the typical materials and properties, including stress limits, for the materials used in fabrication for the HI-TRAC MS lifting blocks and their attachment bolts as shown in FSAR Figure 8.II.0-1**

Holtec Response:

The typical materials used in the fabrication of the lift blocks are [Proprietary Information withheld in accordance with 10 CFR 2.390]. The typical material used in the fabrication of the lift block attachment bolts is [Proprietary Information withheld in accordance with 10 CFR 2.390]. The mechanical material properties for the materials stated above are defined in ASME Boiler & Pressure Vessel Code Section II.