

Attachment 1 to Holtec Letter 5025062
Response to RAI 17-8

RAI 17-8: Provide the fracture toughness testing requirements for ferritic steels used at the HISTORE CIS Facility and clarify the value of the applicable lowest service temperature.

SAR Section 17.4.1 incorporates by reference information from HI-STORM UMAX FSAR, Section 3.3, to define the mechanical properties of materials used at the HI-STORE CIS Facility. However, the cited reference does not include the HI-STORM UMAX FSAR information on ferritic steel fracture toughness testing requirements (e.g., Table 3.1.9, "Fracture Toughness Test Requirements," in the HI-STORM UMAX FSAR).

A description of the tests that are to be performed on ferritic steels that will demonstrate adequate resistance to brittle fracture is needed to allow staff to evaluate the performance of ITS SCCs used at the HI-STORE CIS Facility. Specific information needed includes:

- The specific value of the lowest service temperature that will be used to define testing requirements for all SCCs at the HI-STORE site and a justification for that temperature. SAR Section 17.4.3 states that the lowest service temperature will be 10 degrees F below the 24-average at the site for any day within the last year. Additional information is needed on the historical daily minimum temperatures to understand the degree to which the selected threshold is expected to bound the temperatures during the 40-year license.
- Fracture testing methodology, test temperature, and acceptance criteria for components and welds designed to ASME Code Section III, Subsection NF (transfer cask, tilt frame, canister transfer facility, vertical ventilated module (VVM), and applicable portions of the vertical cask transporter).
- Clarification of whether ASTM materials used in components designed to the ASME Code (e.g., transfer cask, tilt frame, and canister transfer facility) are subject to the ASME fracture testing requirements – and a technical justification if this is not the case.
- Fracture testing requirements for the bolts that secure the transfer cask to the VVM and canister transfer facility.
- Note: testing of special lifting devices and the crane is addressed separately in RAI 17-2.

This information is required to demonstrate compliance with 10 CFR 72.24(c)(3) and (d).

Holtec Response: The fracture toughness testing requirements for ferritic steels used at the HISTORE CIS Facility and the value of the applicable lowest service temperature are provided below as requested.

- The temperature data collected over approximately 75 years at the Lea County Regional station is summarized in SAR Table 2.3.1. The minimum average monthly temperature for that entire time period is 27.72°F, and the extreme minimum recorded temperature is -11°F. Thus, to eliminate the risk of brittle fracture, the lowest service temperature that is used to define testing requirements for the HI-STORM UMAX VVM at the HI-STORE site is set at -40°F. The lowest service temperature that is used to define testing requirements for the HI-TRAC CS, the Cask Transfer Facility, and the Tilt Frame is set at 0°F. Consequently, the HI-TRAC CS, the Cask Transfer Facility, and the Tilt Frame may only be used if the 3-day average daily temperature at the HI-STORE site is above 0°F.

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- The fracture testing methodology, test temperature, and acceptance criteria for components and welds designed to ASME Code Section III, Subsection NF have been clarified in Subsection 17.4.3 of the SAR. In particular, the fracture toughness test requirements for the HI-STORM UMAX VVM are the same as those provided in Table 3.1.9 of the HI-STORM UMAX FSAR, which is incorporated by reference in the HI-STORE SAR. The fracture toughness test requirements for the HI-TRAC CS, the Cask Transfer Facility, and the Tilt Frame are summarized in Table 17.4.1, 17.4.2, and 17.4.3, respectively.
- ASTM materials used in the HI-TRAC CS, CTF and Tilt Frame are subject to the ASME fracture testing requirements as specified in SAR Tables 17.4.1, 17.4.2, and 17.4.3, respectively.
- The fracture testing requirements for the bolts that secure the transfer cask to the VVM and canister transfer facility are specified in SAR Table 17.4.1.