

Request for Additional Information
Docket No. 71-9375
Model No. HI-STAR ATB 1T Package

By letter dated June 9, 2022 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML22161A058), Holtec International (Holtec) submitted an amendment request for the Model No. HI-STAR ATB 1T package. Holtec proposed an alternative high strength material to be added as an optional material of construction for the HI-STAR ATB 1T containment boundary.

This request for additional information (RAI) identifies information needed by the staff in connection with its review of the application.

Each individual RAI describes information needed by the staff to complete its review of the application and to determine whether the applicant has demonstrated compliance with the regulatory requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71.

CHAPTER 2 MATERIALS REVIEW:

- 2-1 Justify the use of materials specifications and their properties for the ITS HI-STAR ATB 1T containment boundary that are not included as permissible materials for ASME Section III Subsection NB.

SAR Section 1.2 "Description of Packaging Components and Their Design & Operational Features" states, "The governing Code for the design of the Containment Boundary of HI-STAR ATB 1T is ASME Code Subsection NB [1.2.1] which has well-articulated rules for plate & shell type structures operating under ambient conditions." SAR Table 2.1.7: Applicable Codes and Standards for the Materials Procured/Fabricated for the HI-STAR ATB 1T Packaging specifically cites ASME Code Section III Subsection NB for the containment boundary components. SAR Section 4.1, "Containment Boundary", the applicant states that, "The containment boundary system components for the HI-STAR ATB 1T system are designed and fabricated in accordance with the requirements of ASME Code, Section III, Subsection NB."

However, the HI-STAR ATB 1T design proposes to use two materials that are not approved as permissible materials for ASME Section III Class 1 construction, SA-508 Class 4N Grade 2, and ASTM A514. In ASME BPV Code Section III, 2013 Edition, there is no entry for SA-508 4N Class 2. While SA-508 4N, Class 2 is included in the 2021 edition, per Table 2A, it is not permitted for use in Section III. ASTM A514 has not been incorporated into the ASME B&PV code as a permissible material for any Section III or Section VIII component. Consequently, the ASME code does not include values of tensile strength, yield strength, design stress and design stress intensity as a function of temperature.

In addition, for thickness greater than 2.5", the ASTM specification for A514 specifies a minimum tensile strength of 100 ksi. The staff notes that the HI-STAR ATB 1T

containment baseplate is greater than 2.5" thick. Table 2.2.1A of Enclosure 3, lists the Su as 105 ksi.

The staff requests the applicant to address this discrepancy in the application with Subsection NB and with the ASTM specification with the values in Table 2.2.1A to account for the material properties of a HI-STAR ATB 1T containment baseplate manufactured using ASTM A514.

This information is requested by the staff to demonstrate compliance with 10 CFR 71.31(c), 71.33(a) and 71.51(a).

- 2-2 Provide the material properties of welds used in modeling of the containment boundary or provide a justification for why the properties of the welds do not need to be explicitly considered.

In Enclosure 6, Section 3.6 states, "Trivial simplifications and approximations are considered in the finite element model as follows, without compromising the quality and accuracy of the simulation model: 1. The welded connections between the containment walls and the baseplates are explicitly represented in the FE model by distinct parts. For conservatism, the analytical (FE) model considers the SS-308 weld material properties to develop the true-stress-vs-strain curve."

The staff notes that a true-stress true-strain curve was developed for the Type 308 weld filler metal in Enclosure 6 Appendix A. The ATB 1B 308 weld metal would be representative of the welded connections for the Type 304 Stainless Steel Dose Blocker Plates which serve as a shielding component but not for the welds for the ferritic steel containment boundary, which have different material procurement and NDE acceptance criteria.

The containment boundary is to be manufactured using ferritic steels including ASTM A514, or ASME SA-517 or ASME SA-508 Class 4N Grade 2. It is not clear whether the mechanical properties of the containment boundary welds were specifically considered but Enclosure 6 does not contain true-stress true-strain curves for the containment boundary welds.

This information is requested by the staff to demonstrate compliance with 10 CFR 71.31(c), 71.33(a) and 71.51(a).