Clarification Questions for TN Americas LLC (TN) regarding request for additional information (RAI) responses for EOS A3

Note: TN's responses are highlighted.

RAI 4-6 Part b: Clarify the following in Section 2.4.3.1 of the Safety Analysis Report (SAR).

a. Specify that the use of superposition of results is an intermediate step in evaluating the effect of individual design changes and that the final step in evaluating the impact of the design changes will incorporate all design changes into the thermal models.
b. Clarify if individual increases in temperature will be thermally modeled collectively.
c. Clarify the term, "Design changes," in the fourth paragraph of step 4.
d. Revise the term, "alternation," in the fourth paragraph of step 4.
e. Clarify whether design changes that are addressed in step 4 of Section 2.4.3.1 of the SAR could change the bounding load cases that are considered.

The evaluation of individual design changes separately in the thermal model (i.e., the concept behind superimposing of results that was described in item 3, now item 4, of SAR Section 2.4.3.1, but then removed) is important because it acts as a sensitivity analysis to the individual design changes. Also, adding description to the term, "Design changes," will make it clearer that the term represents design changes considered on an individual basis, as well as collectively.

The first paragraph of Section 2.4.3.1 describes following the methodology in Sections 4.9.8.2, A.4.5.6, and 4.9.8.3 of the SAR, which includes the bounding load cases. However, it has not been addressed in Section 2.4.3.1 of the SAR, whether design changes that are addressed in step 4 of Section 2.4.3.1 of the SAR could change the bounding load cases that are considered (e.g., if vacuum drying could become a bounding load case).

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

TN will revise SAR to respond to a through d
TN – for part e of this question: operational experience and limits in the technical specifications (TS) prevent a scenario from going outside the bounds. TN will provide supplemental response. SAR will not change.

RAI 5-1: Clarify and update Technical Specification Section 4.4.4 (page 4-7) that references the "fabrication leak test".

As mentioned in the original RAI 5-1, the differentiation between a helium leak test according to the American National Standards Institute (ANSI) N14.5 versus a "fabrication leak test" and "pressure test" is not easily discernible in Technical Specification Section 4.4.4; this is to be corrected because the important to safety confinement boundary's pressure test and helium leak test per ANSI N14.5 are distinct acceptance tests with different purposes and sensitivities.

TN will update TS Section 4.4.4 to remove discrepancy in language. Change “fabrication leak test” to “fabrication pressure test”.

RAI 10-1:

Part 2: Explain the notation in the flaw size and type table (e.g., 0.13 h/w) included in response to RAI 10-1 part 2. It is not clear to the staff whether this notation indicates a ratio of height (h) to width (w) or whether this refers to the flaw dimensions relative to h or w. Clarify how the width of the weld is determined. Specifically, indicate whether w is assumed to be constant or if w is determined based on the actual width of the weld at the flaw location.

TN provided clarification for flaw size 0.13 height and 0.13 width.

Part 3: As described in SAR Section 10.1.3.1, the proposed acceptance criteria for the outer top cover plate (OTCP) weld requires the detection and sizing of planar flaws, including root-penetrating flaws. The staff note that the proposed phased array automated ultrasonic testing (PA-AUT) acceptance criteria for planar defects such as lack of fusion are substantially different from those listed in American Society of Mechanical Engineers (ASME) Section III Subsection NB Paragraph NB-5330 Ultrasonic Acceptance Standards which includes specific acceptance standards for fabrication (NB-5331) and preservice examination (NB-5332). The acceptance standards for fabrication in NB-5331(b) states that indications characterized as cracks, lack of fusion, or incomplete penetration are unacceptable regardless of length. The acceptance standards for preservice examination in NB-5332 refers to the acceptance standards of Section XI, IWB-3000.

PA-AUT calibration in accordance with ASME Section V, Article 4 that includes the requirements for a calibration block, such as that described in Paragraph T-434, is not sufficient to size the weld flaws described in the response to RAI 10-1 parts 2 and 3. The staff note that the acceptance standards of NB-5331 Fabrication do not require the demonstrated ability to size planar flaws such as cracks, lack of fusion, or incomplete penetration because all such flaws, if detected, are unacceptable. In order to implement acceptance criteria in Section XI, IWB-3000 the ultrasonic testing (UT) technique must be demonstrated in such a fashion that shows the examination technique is able to size flaws. This is typically accomplished using a performance demonstration for ultrasonic examination procedures, equipment, and personnel via ASME Section XI Mandatory Appendix VIII Performance Demonstration for Ultrasonic Examination Systems or ASME Section V Article 14. Examination System Qualification.

Please provide the following additional information with respect to the use of ASME Section V, Article 4, Ultrasonic Examination Methods of Welds to the PA-AUT procedure for examination of the OTCP to dry shielded canister (DSC) shell weld:

1. Clarify whether the PA-AUT procedure calibration and demonstration described in the response to RAI 10-1 part 3 will be performed using blocks or mockups that are representative on the OTCP including the OTCP dimensions and the OTCP to DSC shell weld geometry, for both gas tungsten arc welding (GTAW) multipass and high amperage gas tungsten arc welding (HA-GTAW) methods. Provide a detailed figure of the OTCP geometry and OTCP to shell weld with the exam volume identified and clarify how the PA-AUT employed will provide coverage of the entire exam volume.

2. Explain whether post weld surface preparation such as grinding will be performed prior to the PA-AUT calibration and demonstration or prior to the examination on an actual OTCP to DSC shell weld.

3. Describe how detection will be accomplished in light of the fact that the technique will rely on both direct and reflected scans in the OTCP which includes machined surfaces next to the weld that could act as geometric reflectors and complicate UT interpretation of flaws in the weld. Describe how the detection of weld flaws on the shell side of the weld will be accomplished considering that beam scattering and redirection by the weld is likely to occur for a single sided examination (i.e., access to only the OTCP side of the weld).

4. As noted above the PA-AUT calibration process is not sufficient to size weld flaws. As such, please address the calibration and demonstration processes that will be implemented to assure that the PA-AUT will be able to effectively and accurately size the detected weld flaws described in the response to RAI 10-1. Include a description of the distribution of weld flaws (sizes, locations, types, and orientation) in the mockup set. Describe the detection acceptance criteria for the qualification of procedures, equipment, and personnel including the requirements for both flaw detection and false calls. Describe the width-sizing and height-sizing error calculation and acceptance criteria.

TN will provide supplemental responses to questions above.