

From: Wiebe, Joel
Sent: Friday, April 10, 2020 12:47 PM
To: Lisa Zurawski (Lisa.Zurawski@exeloncorp.com)
Subject: Preliminary RAIs for Exelon's April 6, 2020, Application to Defer Braidwood, Unit 2, Steam Generator Inspections

Lisa,

Let me know when you will be ready to hold a clarification call.

Joel

RAI Basis

The TS for all PWR plants require that an SG program be established and implemented to ensure that SG tube integrity is maintained. SG tube integrity is maintained by meeting the performance criteria specified in Section 5.5.9 of the Braidwood U2 TS for structural and leakage integrity, consistent with the plant design and licensing basis.

1. Wear at support structures

Following the Spring 2017 SG inspections (A2R19), a 39% through-wall (TW) flaw from Anti-Vibration Bar (AVB) wear was returned to service. The Operational Assessment (OA) performed at that time supported operation for two cycles to Spring 2020 (A2R21). Table 6 in Attachment 1 of the LAR projects a measured depth of 52% TW at the Fall 2021 inspection (A2R22). Please provide the following information about the evaluation:

- a. Notes 1 and 2 of Table 6 state that the basis for selection was "paired wear indications" at A2R17 and A2R19. Please explain the "paired wear indications" methodology and clarify how the 95th percentile paired wear indication growth rates were determined, including how the methodology and rates compare to historical wear growth rates determined for Braidwood Unit 2.
- b. Table 6 does not appear to account for NDE measurement uncertainty, beyond the statement that the arithmetic method of uncertainty was used in the evaluations. Please clarify how NDE measurement uncertainty was used in the OA projections in Table 6.

2. Axial ODS/SCC in high residual stress tubing

For Figure 1 on page 10 of Attachment 2, please clarify the following:

- a. Are the blue dots in Figure 1 made using the EPRI upper bound structural average growth rate?

- b. Is the yellow curve made using only the four indications observed in the A2R10 outage?
 - c. It appears the indications from A2R10 are also plotted on the graph as yellow dots. However, it appears the yellow dot at approximately 42% TW may not be graphed correctly. Our understanding of the A2R10 indications is that the smallest indication was only 26% TW.
 - d. In the last paragraph on page 10, please clarify the following:
 - i. "When the model is rerun using the number of indications observed in SG C, the predicted depth distribution significantly bounds the observed depth distribution, suggesting that the applied growth rate is conservative." The underlined portion of this sentence appears to be implying that the yellow curve significantly bounds the yellow dots in Figure 1, which does not seem validated by the good fit of the yellow curve to the yellow dots. Please clarify if the sentence is referencing a different "observed depth distribution."
 - ii. Please elaborate on this sentence, "The simulation software was used to optimize the growth rate for the observed A2R10 indications."
 - iii. "This effort shows that an alternate non-linear function form benchmarks well to the observed A2R10 depths and this growth rate distribution is also bounded by the upper bound default of the EPRI IAGL." The first half of this sentence (underlined) appears to indicate that the yellow curve and the yellow dots in Figure 1 are in good agreement; however, the remainder of the sentence appears to indicate that if the upper bound default growth rates of the EPRI IAGL were simulated and plotted on Figure 1, it would bound the yellow curve. Please confirm our understanding.
3. Please discuss if the bobbin coil mix residual voltage screening criteria used in 2017 at the non-high stress tubing TSP intersections, to determine if a supplemental examination is needed, would have detected the 2011 indication in SG C, R44 C47 that was subsequently in-situ pressured tested in 2012.

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