

From: Wiebe, Joel
Sent: Monday, August 10, 2020 4:32 PM
To: Lisa Zurawski (Lisa.Zurawski@exeloncorp.com)
Subject: Final RAIs for Braidwood UHS Amendment

Lisa,

Here are the final RAIs.

Joel

By letter dated July 15, 2020 (Agencywide Documents Access and Management System (ASAMS) Accession No. ML20197A434), Exelon Generation Company, LLC (EGC, the licensee) submitted a license amendment request (LAR) for Braidwood Station, Units 1 and 2 (Braidwood). In its LAR, the licensee proposed to modify technical specification (TS) 3.7.9, "Ultimate Heat Sink (UHS)," Condition A and respective Completion Time (CT) and by adding a new Condition B. The licensee's LAR also modifies surveillance requirement (SR) 3.7.9.2. In LAR the licensee states that the proposed TS 3.7.9 and TS SR 3.7.9.2 satisfy the requirements of 10 CFR 50.36(c)(2)(ii), Criterion 3.

1. The proposed changes in TS 3.7.9 would increase the Required Action Completion Time (CT) for Condition A to be in Mode 3 from 6 hours to 12 hours, if the UHS is inoperable due to "average UHS water temperature."

It is not clear to the NRC staff how the term, "average UHS water temperature," is defined in this TS. Is it an average over 24 hours, 48 hours, or some other duration? How and where are the data taken? Are the data taken from measurement or calculations? Define or clarify the term, "average UHS water temperature" in the current licensing basis.

2. The Current TS SR 3.7.9.2 states: "Verify average water temperature of UHS is \leq 102 °F." In its letter dated July 15, 2010, the licensee proposed to add a sentence to SR 3.7.9.2 to: "Verify average water temperature of the UHS is \leq 102.8 °F between July 15, 2020 and September 30, 2020." The NRC staff is concerned the proposed modification will not provide the licensee the flexibility intended since the sentence added as written is in addition to the first sentence and not in lieu of it.
 - a. Provide a modified version of the sentence, proposed to be added, that is worded as an exception.
 - b. It is not clear why the July 15, 2020, date is included in the proposed sentence. The TS cannot be retroactively effective. The TS will be effective on the date of issuance. Provide a modified version of the sentence that just includes the date when the TS exception expires.

3. 50.36(c)(2), states that limiting conditions for operation (LCOs) are the lowest functional capability or performance levels of equipment required for safe operation of the facility, and when an LCO is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the LCO can be met.

The license amendment request proposes a permanent change to extend the completion time for the Required Action of both Braidwood Station, Units 1 and 2 to be placed in Mode 3 within 12 hours (currently 6 hours) when the ultimate heat sink (UHS) is inoperable due to high average water temperature. As stated in the LAR, "This proposed change would allow the natural diurnal cooling behavior of the lake to occur in restoring the UHS temperature below the TS limit without having to shutdown both Braidwood units and place each unit through an unnecessary thermal cycle evolution." While it is understood that the natural diurnal cooling behavior will ultimately lower the average water temperature, the Braidwood units would not meet LCO 3.7.9 and would be operating outside of their design basis when the TS temperature limit is exceeded. As stated in the Braidwood TS Bases for TS 3.7.9 "Ultimate Heat Sink (UHS)," the current 6 hour timeframe to be placed in Mode 3 is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

Provide justification regarding the acceptability of operating outside of the design basis for up to an additional 6 hours (potentially every day during the summer). In addition, staff requests that you provide justification that allowing the natural diurnal cooling behavior of the lake to occur is the appropriate remedial action to take as the lake could continue to heat up prior to cooling down.

The following should be included in your justification:

- Recent operating data over the past several years for UHS temperatures, including daily peak values, during the summer indicative of timing for the natural diurnal heating and cooling cycle.
 - The impact of the proposed extension of completion time on the operational risk versus risk due to shutdown and return to power. The discussion should include consideration of risk due to the anticipated number of days of operation above the TS temperature limit.
4. In its July 15, 2020, letter the licensee states:
These [post-accident performance of equipment served by SX] analyses use design fouling values and tube plugging limiting criteria. Actual tube plugging is lower than analyzed and fouling values are lower in Summer months due to higher SX flows through the cooling equipment. These margins remain during the period of the requested higher SX temperature limit of 102.8°F.

The NRC staff is aware of recent potential fouling conditions in the cooling lake such as possible fish scales and occasional precipitation of solids in the cooling lake. Discuss the potential effect these conditions and other known conditions on

design fouling values and subsequent impact on margin during the period of the requested higher SX temperature limit of 102.8 degrees.

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