

**From:** Wiebe, Joel  
**Sent:** Thursday, January 23, 2020 8:15 AM  
**To:** Lisa Zurawski (Lisa.Zurawski@exeloncorp.com)  
**Subject:** RAIs for L-2019-LLA-0201 - Braidwood, Units 1 and 2, LAR to Revise TS 3.7.9, "Ultimate Heat Sink"

Lisa,  
Let me know if you need a clarification call by 1/30/2020.  
Thanks,  
Joel

By letter dated September 11, 2019 (Access and Management System (ADAMS) Accession No. ML19254D105), Exelon Generation Company, LLC, (EGC) requested an amendment to Braidwood Station, Unit 1 Renewed Facility Operating License No. NPF-72, and to Unit 2 Renewed Facility Operating License NPF-77. The license amendment request (LAR) proposed changes for Braidwood Station Units 1 and 2 TS 3.7.9, "Ultimate Heat Sink (UHS)" to revise the verification of the ultimate heat sink inventory, from a level-based verification to a volume-based verification.

The Nuclear Regulatory Commission (NRC) staff has reviewed the LAR and determined that additional information is needed to complete the review.

**REQUEST FOR ADDITIONAL INFORMATION**

**Regulatory Requirement:**

10 CFR 50.36(c)(3) requires TS to include items in the category of surveillance requirements (SRs), which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCO will be met.

**Discussion:**

Appendix A to the Braidwood Station Unit 1 and Unit 2 UFSAR indicates that the licensee meets all objectives set forth in Regulatory Guide 1.27 Revision 2 "Ultimate Heat Sink For Nuclear Power Plants." No exceptions to RG 1.27, Revision 2 were noted.

*Regulatory Guide 1.27 Revision 2 "Discussion" Background* reads in part:

To ensure that the UHS has sufficient water available for its safety functions if a dam or other water-controlling structure is required, the dam or other water-controlling structure, within the jurisdiction of the licensee/applicant, and connecting piping systems should be included in the Structures Monitoring Program in accordance with Regulatory Guide 1.160 (Ref. 6) and the Maintenance Rule at 10 CFR 50.65. Inspection and monitoring of dams or other water control structures should be conducted to ensure that changes in structural, hydraulic and foundation conditions can be detected.

Regulatory Position C.4 for Regulatory Guide 1.27, Revision 2 reads:

4. The technical specifications for the plant should include provisions for actions to be taken in the event that conditions threaten partial loss of the capability of the ultimate heat sink or the plant temporarily does not satisfy regulatory positions 1 and 3 during operation.

*NUREG-0800 Standard Review Plan , Revision 2, dated July 1981, 2.4.8 Cooling Water Canals and Reservoirs* excerpts from "Acceptance Criteria" read:

To meet the requirements of 10 CFR Part 50, §50.55a, GDC 2, GDC 44, and 10 CFR Part 100 as they relate to cooling water canals and reservoirs, the following specific criteria are used:

1. Where canals comprise a part of the ultimate heat sink, Regulatory Guide 1.27 is used as a basis for the adequacy of design criteria and provisions.

2.g. If reservoirs comprise a part of the ultimate heat sink, Regulatory Guide 1.27 is used as a basis for judging the adequacy of the design criteria and provisions.

The licensee stated that to satisfy the current requirements of Braidwood Station Unit 1 and Unit 2, SR 3.7.9.3 a survey of the essential service cooling pond (ESCP) is performed on a frequency in accordance with the Surveillance Frequency Control Program to verify the bottom elevation of the ESCP is 584 feet or less utilizing Procedure BwVSR 3.7.9.3, "Braidwood Cooling Lake Hydrographic Survey." This procedure also validates the water level of the UHS is higher than or equal to 590 feet and determines the water volume of the ESCP below elevation 590 feet.

The staff review of the history associated with the Braidwood Station UHS, suggests that the non-conforming conditions of the UHS as reflected in Exelon Generation Company, LLC, (EGC) Letter (Serial No. RS-15-231) dated August 24, 2015 (ADAMS Accession No. ML15236A144) would have been identified through the current requirement for soundings of the UHS via SR 3.7.9.3.

The staff notes that the frequency of performance was 18 months for SR 3.7.9.3 after the Braidwood Stations full conversion to improved Technical Specifications per NUREG-1431 per Amendment 98 in December 1998 (ADAMS Accession No. ML11223A306).

The staff also notes that its review of the docketed information associated with the review and approval of Amendment Number 189 for Braidwood Station Units 1 & 2 indicates that there is both a gross and effective value for the required water volume contained in the UHS. EGC's response to NRC RAI-5 related to Amendment Number 189 (Attachment 1 to ADAMS Accession No. ML 15120A396) identifies the value of 555.8 acre-feet that is proposed in EGC's letter dated September 11, 2019, for inclusion within SR 3.7.9.3 as the gross value. The effective area and volume were calculated to be 82.3% of the gross value per Table 1 of Attachment 1. The Braidwood Updated Final Safety Analysis Report (UFSAR), Revision 17, Section 9.2.5, "Ultimate Heat Sink," Page 9.2-43 (ADAMS Accession No. ML19170A384), provides insufficient information with respect to interpretation of the value proposed for inclusion in SR 3.7.9.3. The marked-up TS Bases page B 3.7.9-4 as provided with the LAR Attachment 3 does not provide information to clarify the proposed SR 3.7.9.3.

**Request for Additional Information:**

- 1) Describe how the attributes of Reference 5 to EGC's letter dated September 11, 2019 (BwVSR 3.7.9.3, "Braidwood Cooling Lake Hydrographic Survey," Revision 7) satisfy the guidance in the above cited excerpts of Regulatory Guide 1.27 and NUREG-0800 Standard Review Plan 2.4.8. Alternatively, describe how Reference 5 provides appropriate alternatives and assures the minimum required water volume and monitoring of water controlling structures are met. Include a discussion of how the uncertainty of the survey measurement and related calculations is accounted for.
- 2) Provide the initial frequency of performance for the proposed SR 3.7.9.3 and its basis.
- 3) Proposed SR 3.7.9.3 reads "*Verify UHS contains a water volume of  $\geq 555.8$  acre-feet.*" This is a gross value as identified above. Clarify the current licensing basis (CLB) requirements for Braidwood Station gross and effective water volume of the UHS.

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