



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 18, 2022

Mr. David P. Rhoades
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2 – AUDIT PLAN IN SUPPORT
OF REVIEW OF LICENSE AMENDMENT REQUEST REGARDING
THE ULTIMATE HEAT SINK (EPID L-2021-LLA-0141)

Dear Mr. Rhoades:

By letter dated August 2, 2021, Exelon Generation Company, LLC (Exelon) submitted a license amendment request (LAR) for Braidwood Station, Units 1 and 2 (Braidwood). In its LAR, Exelon proposed adding two Required Actions and associated Completion Times to Technical Specification (TS) 3.7.9, "Ultimate Heat Sink [UHS]," for an inoperable UHS due to the average water temperature.

During the initial review of the LAR, the U.S. Nuclear Regulatory Commission (NRC) staff identified several items that require further clarification and detailed explanations. The NRC staff will conduct a regulatory audit to support its review of the LAR in accordance with the enclosed audit plan. A regulatory audit is a planned activity that includes the examination and evaluation of primarily non-docketed information. The audit will be conducted to increase the NRC staff's understanding of the LAR and identify information that will require docketing to support the NRC staff's regulatory finding.

The audit will be conducted on January 28, 2022, using audio/video conferencing. The logistics and scope of this audit were discussed with your staff on December 3, 2021. The audit plan is enclosed.

D. Rhoades

-2-

If you have any questions, please contact me by telephone at 301-415-6606 or by e-mail to Joel.Wiebe@nrc.gov.

Sincerely,

/RA/

Joel S. Wiebe, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456 and
STN 50-457

Enclosure:
Audit Plan

cc: Listserv

AUDIT PLAN

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING LICENSE AMENDMENT REQUEST REGARDING THE ULTIMATE HEAT SINK

BRAIDWOOD STATION, UNITS 1 AND 2

DOCKET NOS. STN 50-456 AND STN 50-457

EPID L-2021-LLA-0141

1.0 BACKGROUND

By letter dated August 2, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21214A331), Exelon Generation Company, LLC (Exelon or licensee) submitted a license amendment request (LAR) for Braidwood Station, Units 1 and 2 (Braidwood). In its LAR, Exelon proposed adding two Required Actions and associated Completion Times to Technical Specification (TS) 3.7.9, "Ultimate Heat Sink [UHS]," for an inoperable UHS due to the average water temperature.

During the initial review of the LAR, the U.S. Nuclear Regulatory Commission (NRC or Commission) staff identified several items that require further clarification and detailed explanations. The NRC staff will conduct a regulatory audit to support its review of the LAR in accordance with this audit plan. A regulatory audit is a planned activity that includes the examination and evaluation of primarily non-docketed information. The audit will be conducted to increase the NRC staff's understanding of the LAR and identify information that will require docketing to support the NRC staff's regulatory finding.

2.0 REGULATORY AUDIT BASES

The NRC staff will perform the audit to support its evaluation of whether the licensee's request can be approved per Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.92, "Issuance of Amendment, which states, in part, that, "In determining whether to issue an amendment to a license, ..., the Commission will be guided by the considerations which govern issuance of initial licenses...." Applicable regulations considered in that review include 10 CFR, Section 50.34, "Contents of Applications; Technical Information," and applicable general design criteria (GDC) from Appendix A to 10 CFR Part 50 (i.e., GDCs 2, 5, and 44).

In the Braidwood Updated Final Safety Analysis Report, Section 3.1.1 (ADAMS Accession No. ML21137A212), the licensee concludes that Braidwood fully satisfies, and is in compliance with, the GDC.

10 CFR, paragraph 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.

Paragraph 50.36(c)(3) of 10 CFR states that surveillance requirements (SRs) 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 LCOs will be met.

Regulatory Guidance

NUREG-0800 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [light-water reactor] Edition," Section 9.2.5, "Ultimate Heat Sink," Revision 2, July 1981 (ADAMS Accession No. ML052350549), Section IV, "Acceptance Criteria" and "Evaluation Findings," contains the following, in part:

GDC 2, as related to structures housing the system and the system itself being capable of withstanding the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, and floods. Acceptance is based on meeting the guidance of Regulatory Guide 1.29, Revision 3 (ADAMS Accession No. ML003739983), Position C-1 and Regulatory Guide 1.27, Revision 2 (ADAMS Accession No. ML003739969), Positions C-2 and C-3.

GDC 5, as related to shared systems and components important to safety being capable of performing required safety functions.

GDC 44, as related to UHS requirements. Acceptance is based upon meeting the guidance of Regulatory Guide 1.27 and demonstrating the capability to transfer heat loads from safety-related SSCs [structure, system, and components] to the heat sink under both normal operating and accident conditions.

3.0 REGULATORY AUDIT SCOPE AND METHODOLOGY

The proposed amendment utilizes existing margin in Design Analysis to offset the increase in the TS SR UHS temperature based on actual or projected plant conditions at the time of entry into the new TS Required Actions A.1.1 and A.1.2. Braidwood, Units 1 and 2, License Amendment No. 222, dated July 13, 2021, (ADAMS Accession No. ML21154A046) used existing margin in Design Analyses to offset the increase in UHS temperature up to 102.8 °F (degrees Fahrenheit). The NRC staff wants to see an example of how the TS would be implemented for a hypothetical projected UHS temperature of 103.5 °F.

4.0 INFORMATION AND OTHER MATERIAL NECESSARY FOR THE AUDIT

The NRC staff requests the licensee to have the following information readily available and accessible for the NRC staff's review:

Information related to:

An example engineering analysis that demonstrates how the Required Action A.1.1 would be implemented for an hypothetical projected UHS temperature of 103.5 °F. This example engineering analysis is not expected to have the reviews and approvals required by an actual engineering analysis, but it is expected that the design margins used in the engineering analysis be actual currently available margins. In the event the currently available margin is not sufficient to allow the UHS to reach 103.5 °F, the maximum currently attainable UHS temperature should be demonstrated.

Discussion Topics:

1. The NRC staff needs information related to the purpose of Required Action A.1.2.
2. The proposed Required Action A.1.1 allows changes to a TS value without NRC approval. The maximum analyzed temperature limit calculation methodology is not included in the Braidwood TS. This does not meet the intent of 50.36.

The policy statement on TS (58 FR 39132) states "*The purpose of Technical Specifications is to impose those conditions or limitations upon reactor operation necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety by identifying those features that are of controlling importance to safety and **establishing on them certain conditions of operation which cannot be changed without prior Commission approval.***" By moving the maximum allowable temperature to a licensee controlled document, this would allow changes to the "conditions of operation" without NRC approval.

TSTF-330-A, Rev. 3 "Allowed Outage Time - Ultimate heat sink" provides an approved methodology similar to what is being pursued by the licensee. Discuss whether the TSTF-330-A approach was considered and why the current less conservative approach was chosen.

3. Required Action A will be entered during the day as the ambient temperature increases and the UHS becomes inoperable due to high average water temperature. As the ambient temperature decreases and the UHS cools, Required Action A will likely be exited during the night. The following day as the ambient temperature increases, the Action will be re-entered, and then re-exited with no action besides waiting for the ambient temperature to decrease. This is inconsistent with the intent of the Use and Application rules as stated in Section 1.3 of the Braidwood TS.

From Braidwood TS Section 1.3:

*"It is possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely doing so would be inconsistent with the basis of the Completion Times. **Therefore, there shall be administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the Completion Times for those Conditions are not inappropriately extended.**"*

The NRC staff will determine after completing the audit whether it needs to request any additional information to be placed on the docket.

5.0 AUDIT TEAM

The audit team will consist of the following NRC staff from NRR:

- Mr. Joel Wiebe, Plant Licensing Branch III
- Mr. Gordon Curran Jr., Containment and Plant Systems Branch (SCPB)
- Mr. Chang Li, SCPB

- Mr. Robert Beaton, Nuclear Systems Performance Branch (SNSB)
- Mr. Santosh Bhatt, SNSB
- Mr. Joshua Wilson, Technical Specifications Branch (STSB)
- Ms. Caroline Tilton, STSB

6.0 LOGISTICS

The audit will be conducted using audio/video conferencing via TEAMS. The NRC staff requests the licensee to have the information discussed in Section 4.0 readily available for the audit. The NRC staff requests the licensee to have its staff available at a mutually agreeable time to present and discuss the information identified in Section 4.0. The NRC staff will not take possession of any of the information made available by the licensee for discussion. If information is needed to be placed on the docket in order for the NRC staff to make a decision regarding the acceptability of the August 2, 2021, submittal, the information will be requested via a subsequent request for additional information.

7.0 DELIVERABLES

After the audit, the NRC staff will develop any requests for information which it will provide the licensee via separate docketed correspondence. The NRC staff intends to issue an audit summary within 30 days of completion of the audit.

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ADAMS Accession No.: ML21314A218

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