



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

September 14, 2015

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: REGULATORY AUDIT REPORT FOR THE JUNE 11, 2015, AUDIT IN
SUPPORT OF THE ULTIMATE HEAT SINK LICENSE AMENDMENT REQUEST
(TAC NOS. MF4671 AND MF4672)

Dear Mr. Hanson:

By application dated August 19, 2014, Exelon Generation Company, LLC (EGC) submitted a license amendment request (LAR), (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14231A902), to modify the technical specifications for Braidwood Station, Units 1 and 2. Specifically, the change proposed would revise the surveillance requirement (SR) 3.7.9.2 temperature limit for the cooling water supplied to the plant from the ultimate heat sink. EGC requested to replace the existing SR limit of ≤ 100 °F with a new SR limit of ≤ 102 °F.

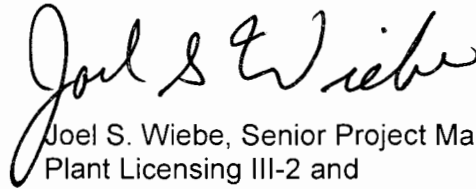
To support the U.S. Nuclear Regulatory Commission (staff evaluation of this LAR, the NRC staff performed a regulatory audit at Braidwood Station in Braceville, Illinois, on June 11, 2015.

B. Hanson

- 2 -

If you have any questions regarding the enclosed audit report, please contact me at (301) 415-6606.

Sincerely,

A handwritten signature in black ink that reads "Joel S. Wiebe". The signature is written in a cursive style with a large initial 'J'.

Joel S. Wiebe, Senior Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. STN 50-456 and STN 50-457

Enclosure:
Audit Report

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REGULATORY AUDIT REPORT IN SUPPORT OF THE
ULTIMATE HEAT SINK LICENSE AMENDMENT REQUEST
BRAIDWOOD STATION, UNITS 1 AND 2
DOCKET NOS. STN 50-456 AND STN 50-457

Background

By application dated August 19, 2014, Exelon Generation Company, LLC (EGC) submitted a license amendment request (LAR) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14231A902), to modify the technical specifications (TSs) for Braidwood Station, Units 1 and 2. Specifically, the change proposed would revise the surveillance requirement (SR) 3.7.9.2 temperature limit for the cooling water supplied to the plant from the ultimate heat sink (UHS). EGC requested to replace the existing SR limit of ≤ 100 °F with a new SR limit of ≤ 102 °F.

In an email dated March 24, 2015 (ADAMS Accession No. ML15084A018), the U.S. Nuclear Regulatory Commission (NRC) staff requested additional information (RAI), which the licensee provided in its submittal dated April 30, 2015 (ADAMS Accession No. ML15120A396). In this letter the licensee identified the model information for the precision temperature instruments used to determine the UHS temperature. In addition, the submittal identified the methodology that was used to calculate the overall uncertainty of 0.07 °F.

To support its safety evaluation, the NRC staff conducted an audit at Braidwood Station in Braceville, Illinois, on June 11, 2015. The purpose of this audit was to: (1) observe the implementation of the procedure for monitoring the UHS temperature using the precision instrument, and (2) verify the uncertainties and methodology used to calculate UHS temperature uncertainty.

The NRC audit participants:

Dan Warner, NRR/DE/EICB
Joel Wiebe, Senior Project Manager, NRR/DORL

EGC personnel contacted:

Murtaza Abbas, Senior Regulatory Specialist
Jessica Krejcie, Corporate Licensing Engineer
Tony Casares, Equipment Operator
Anne Mathews, Operations Field Supervisor

Enclosure

Summary

1. Methodology to calculate overall instrument uncertainty.

In the RAI response, the licensee stated they used Calculation BRW-02-0107-1, Revision 0, "M&TE (Measurement and Test Equipment) Uncertainty Using Hart Scientific Thermometer for Measurement of Essential Service Water Discharge Header Temperature," to calculate the overall instrument uncertainty. Calculation BRW-02-0107-1, Revision 0, was prepared in accordance with Exelon Standard BES-EIC-20.04. The NRC staff reviewed this calculation and observed the following:

- The uncertainties used were identified to correspond to the uncertainty values found in the data sheets and appear to be appropriately applied.
- The calculation used the square root sum of the squares (SRSS) methodology to combine the random errors and then algebraically added the non-random terms. This resulting number was combined using SRSS with the reading error to produce the final overall uncertainty. The methodology appears to be appropriately applied.

2. Procedure for monitoring the UHS temperature using the precision instrument.

During the audit, the NRC staff reviewed the following procedures to determine how the licensee will use the precision thermometer and thermistor probe:

- Procedures 1BwOSR 0.1-1,2,3, "Unit One – Modes 1, 2, and 3 Shiftly and Daily Operating Surveillance,"
- 1BwOSR 0.1-4, "Unit One – Mode 4 Shiftly and Daily Operating Surveillance,"
- 2BwOSR 0.1-1,2,3, "Unit Two – Modes 1, 2, and 3 Shiftly and Daily Operating Surveillance," and
- 2BwOSR 0.1-4, "Unit Two – Mode 4 Shiftly and Daily Operating Surveillance."

The NRC staff observed EGC personnel implement the procedures listed above for taking precision temperature readings at the discharge of two separate Service Water (SX) pumps. These procedures provide the following approach to monitoring the UHS temperature.

- Control room has indication for the temperatures at the discharge of the SX Pumps. If any of the indications for an operating SX pump exceeds 97 °F, then the temperature must be obtained using the precision temperature instrumentation. At this point, an operator is sent to the discharge of the SX pumps to measure the temperature using the precision thermometer and thermistor probe.
- At each SX Pump, the thermometer and thermistor are removed from their case along with a visual guide that shows how to set up the equipment. Once the

thermometer and probe are set up, a spare thermowell is used to record the temperature at the SX Pump Discharge.

- The equipment operator identified that in circumstances where the temperatures are approaching the TS values, operators will be stationed at the discharge of the SX pumps to take temperatures as often as every 15 minutes.

The procedures were clear and easy to follow for monitoring the UHS temperature.

The NRC staff determined that the use of the thermometer and thermister probe was consistent with precision instrument measurement techniques and licensee procedures.

There were no open items identified as a result of this audit.

B. Hanson

- 2 -

If you have any questions regarding the enclosed audit report, please contact me at (301) 415-6606.

Sincerely,

/RA/

Joel S. Wiebe, Senior Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. STN 50-456 and STN 50-457

Enclosure:
Audit Report

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ADAMS Accession No.: ML15232A589

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