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

February 24, 2014

MEMORANDUM TO: Meena K. Khanna, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager ***/ra/***
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3, DRAFT REQUEST FOR ADDITIONAL INFORMATION (TAC NOS. ME9085 AND ME9086)

The attached draft request for additional information (RAI) was transmitted on February 24, 2014, to Mr. Thomas Loomis of Exelon Generation Company, LLC (Exelon, the licensee). This information was transmitted to facilitate an upcoming conference call in order to clarify the licensee's amendment request for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, dated July 18, 2012, as supplemented on January 17, 2013, and April 23, 2013. The proposed amendment would revise the Technical Specifications (TSs) to change the operability requirements for the normal heat sink (NHS). The NHS for PBAPS is the Susquehanna River. Currently, the NHS is considered operable with a maximum water temperature of 90 °F. However, the PBAPS TSs currently allow plant operation to continue if the NHS water temperature exceeds the 90 °F limit, provided that: (1) the NHS water temperature, averaged over the previous 24-hour hour period, is verified at least once per hour to be less than or equal to 90 °F and; (2) the NHS water temperature does not exceed 92 °F. The proposed amendment would change the NHS water temperature limit such that the NHS would be considerable operable as long as the maximum water temperature was less than or equal to 92 °F.

The draft RAI was sent to Exelon to ensure that the questions are understandable, the regulatory basis for the questions is clear, and to determine if the information was previously docketed. This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's request.

Docket Nos. 50-277 and 50-278

Attachment: Draft RAI

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| NAME | REnnis |
| DATE | 2/24/14 |

DRAFT REQUEST FOR ADDITIONAL INFORMATION

REGARDING PROPOSED LICENSE AMENDMENT

REVISE NORMAL HEAT SINK OPERABILITY REQUIREMENTS

PEACH BOTTOM ATOMIC POWER STATION - UNITS 2 AND 3

DOCKET NOS. 50-277 AND 50-278

By letter to the Nuclear Regulatory Commission (NRC) dated July 18, 2012, as supplemented on January 17, 2013, and April 23, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12200A388, ML13018A225, and ML13114A162, respectively), Exelon Generation Company, LLC (Exelon, the licensee), submitted a license amendment request for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The proposed amendment would revise the Technical Specifications (TSs) to change the operability requirements for the normal heat sink (NHS). The NHS for PBAPS is the Susquehanna River. Currently, the NHS is considered operable with a maximum water temperature of 90 °F. However, the PBAPS TSs currently allow plant operation to continue if the NHS water temperature exceeds the 90 °F limit, provided that: (1) the NHS water temperature, averaged over the previous 24-hour hour period, is verified at least once per hour to be less than or equal to 90 °F and; (2) the NHS water temperature does not exceed 92 °F. The proposed amendment would change the NHS water temperature limit such that the NHS would be considerable operable as long as the maximum water temperature was less than or equal to 92 °F.

The NRC staff has reviewed the information the licensee provided that supports the proposed amendment and would like to discuss the following issues to clarify the submittal.

**Question 1**

TS 3.7.2, "Emergency Service Water (ESW) System and Normal Heat Sink," Limiting Condition for Operation (LCO) Required Action B.1 currently requires that the licensee verify that the water temperature of the NHS is ≤ 90 °F, averaged over the previous 24-hour period, if the water temperature of the NHS is > 90 °F and ≤ 92 °F. The completion time for this action is once per hour. The TS Bases for TS 3.7.2 Required Action B.1 state, in part, that:

> With water temperature of the normal heat sink > 90 °F and ≤ 92 °F, the design basis assumptions associated with the initial normal heat sink temperature are bounded provided the temperature of the normal heat sink when averaged over the previous 24 hour period is ≤ 92 °F. **To ensure that the 90 °F normal heat sink temperature limit is not exceeded, Required Action B.1 is provided to more frequently monitor the temperature of the normal heat sink.** The Unit 2 normal heat sink temperature is measured from the Unit 2 intake canal. **The once per hour completion time takes into consideration normal heat sink temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. [emphasis added]**

Attachment

Surveillance Requirement (SR) 3.7.2.2 currently requires the licensee to verify that the average water temperature of the NHS is ≤ 90 °F. The SR frequency is in accordance with the Surveillance Frequency Control Program. In accordance with TS 5.5.14, "Surveillance Frequency Control Program," the program shall ensure that SRs specified in the TSs are performed at intervals sufficient to assure the associated LCOs are met. PBAPS Surveillance Test procedure ST-O-098-01N-2, "Daily Surveillance Log Mode 1, 2, 3" currently requires that the licensee verify and document the NHS temperature once every 24 hours as long as NHS temperature is not above 90 °F.

The proposed amendment would delete the LCO actions associated with verifying the NHS water temperature on an hourly basis when the temperature approaches the operability limit. As currently proposed, assuming no changes to the Surveillance Frequency Control Program, the NHS water temperature would be verified only once per 24 hours. Due to temperature variations over this time period, this 24-hour surveillance frequency may not be sufficient to provide reasonable assurance that design basis assumptions will be met.

In a request for additional information (RAI) dated March 8, 2013 (ADAMS Accession No. ML13070A344), the NRC staff requested the licensee to provide additional justification to provide assurance that the frequency of surveillance is sufficient to assure that design basis assumptions will continue to be met. In the supplement dated April 23, 2013, the licensee provided the following RAI response:

> The 24-hour surveillance frequency is implemented by ST-O-098-01 N-2(3), "Daily Surveillance Log Mode 1, 2, or 3," which assures Technical Specification (TS) surveillance compliance. Supplementing the TS surveillance procedure is routine test RT-O-28B-800-2, "River Temperature and Flow Monitoring," which requires the NHS intake temperature to be recorded at 4-hour intervals when the previous day's average intake temperature is 47 °F or above. In addition, during times of extreme hot weather, a Hot Weather Alert will be issued, in which case OP-AA-108-107-1001, "Station Response to Grid Capacity Conditions," would direct Operations to "augment their normally executed set of rounds with additional checks for those temperature sensitive areas or components."..OP-AA-108-107-1001 would direct Operations to monitor NHS temperature more frequently as required to ensure the TS / design basis assumptions will be met.

Please address the following concerning the April 23, 2013, RAI response:

a) What is the basis for the 47 °F value and the 4-hour internal cited above?

b) What is the definition of Hot Weather Alert? Include who and how a Hot Weather Alert is determined and how timely and by what methods plant operators would be notified.

c It is not clear from the RAI response, the temperature at which NHS intake temperature will be monitored more frequently than the 4-hour interval cited above. In addition, it's not clear what the monitoring frequency will be. As noted above, the current TSs require that the NHS temperature be monitored once per hour as the TS limit is approached. The TS Bases state that the once per hour time frame takes into consideration normal heat sink temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. There does not seem to be any definitive action required at a specific

temperature to provide reasonable assurance that design basis assumptions will be met. Please provide additional justification to demonstrate that the licensee will be able to detect, in a timely manner, temperatures approaching the proposed 92 °F TS limit.

d) In accordance with proposed SR 3.7.2.2, the licensee would verify the 92 °F operability limit on a frequency in accordance with the Surveillance Frequency Control Program. As noted above, in accordance with TS 5.5.14, "Surveillance Frequency Control Program," the program shall ensure that SRs specified in the TSs are performed at intervals sufficient to assure the associated LCOs are met. What procedure and what interval will be credited as part of the Surveillance Frequency Control Program for performance of SR 3.7.2.2 following implementation of the proposed amendment?

**Question 2**

The proposed amendment would change the NHS water temperature limit such that the NHS would be considerable operable as long as the maximum water temperature was less than or equal to 92 °F. The application dated July 18, 2012, states that "[a]ll design basis analyses use 92 °F or greater as an input or determine that the maximum allowable NHS temperature is greater than or equal to 92 °F.

In the RAI dated March 8, 2013, the NRC staff requested the licensee to provide additional justification to provide assurance that instrument uncertainties and other potential uncertainties have been accounted for to assure that design basis assumptions will continue to be met. In the supplement dated April 23, 2013, the licensee provided the following RAI response:

> There are six instruments per unit (TE-2280 A-F for Unit 2 and TE-3280 A-F for Unit 3) which measure the Normal Heat Sink (NHS) temperature. Each temperature element has an accuracy of ± 0.28 °F. The six values are averaged and the resultant output (computer point C148 for Unit 2 and C448 for Unit 3) is used to determine the NHS temperature. Averaging the six instruments increases the accuracy of the temperature reading, which along with margin in the design analysis (discussed below), provides assurance that design basis assumptions will be met.
>
> The analyses which use the NHS temperature utilize design basis values for inputs. The inputs of the calculations are the Technical Specification limits (e.g., highest suppression pool temperature), which provide the worst possible scenario of the plant. Other non-TS inputs include Residual Heat Removal (RHR) heat exchanger fouling. The worst design basis fouling factor is utilized in the analyses. These analyses assume that all of the inputs are at their worst case value. The results of the analyses have margin for the parameter evaluated. For example, the maximum torus temperature for RHR pump Net Positive Suction Head (NPSH) has margin with all input parameters at their Technical Specification limit (i.e., NHS temperature and initial temperature of the suppression pool) and design basis limit (i.e., RHR heat exchanger fouling factor).

The RAI response lacks any specific detail to demonstrate the margin that would be available at the proposed 92 °F TS limit. Please provide the results of the design basis analyses that have been performed quantifying the margin that would be available and the critical systems,

structures, and components the margin is based on.