

April 8, 2014

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Response to Request for Additional Information - Revision of Normal Heat Sink Technical Specification to Remove the 24-Hour Average Temperature Limit With No Change to the Peak Maximum Temperature

- References:
- 1) Letter from M. Jesse (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Revision of Normal Heat Sink Technical Specification to Remove the 24-Hour Average Temperature Limit With No Change to the Peak Maximum Temperature," dated July 18, 2012
 - 2) E-mail from R. Ennis (U.S. Nuclear Regulatory Commission) to T. Loomis (Exelon Generation Company, LLC), "Draft RAI – Peach Bottom Normal Heat Sink Operability Requirements (TACs ME9085 & 86)," dated November 5, 2012
 - 3) Letter from M. Jesse (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information - Revision of Normal Heat Sink Technical Specification to Remove the 24-Hour Average Temperature Limit With No Change to the Peak Maximum Temperature," dated January 17, 2013
 - 4) E-mail from R. Ennis (U.S. Nuclear Regulatory Commission) to T. Loomis (Exelon Generation Company, LLC), "Draft RAI - Peach Bottom Normal Heat Sink Operability Requirements (TACs ME9085 & 86)," dated March 8, 2013
 - 5) Letter from D. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information - Revision of Normal Heat Sink Technical Specification to Remove the 24-Hour Average Temperature Limit With No Change to the Peak Maximum Temperature," dated April 23, 2013
 - 6) E-mail from R. Ennis (U.S. Nuclear Regulatory Commission) to T. Loomis (Exelon Generation Company, LLC), "Draft RAI - Peach Bottom Normal Heat Sink Amendment - TACs ME9085 & 86," dated February 24, 2014

In the Reference 1 letter, Exelon Generation Company, LLC (Exelon) requested a proposed change to modify the Technical Specifications (TSs). The proposed change revises the Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, TS Section 3.7.2, "Emergency Service Water (ESW) System and Normal Heat Sink," to change the requirements for determining the operability of the Normal Heat Sink (NHS). Specifically, this change is proposing to revise TS Section 3.7.2 to remove the maximum 24-hour average temperature limit of 90°F with no change to the peak maximum NHS temperature of 92°F.

In the Reference 2 and 4 e-mails, the U.S. Nuclear Regulatory Commission Staff requested additional information. Attachments 3 and 5 were our responses to these requests. The U.S. Nuclear Regulatory Commission Staff has requested additional information in the Reference 6 e-mail. Attached is our response to this request.

Exelon has reviewed the information supporting a finding of no significant hazards consideration and the environmental consideration provided to the U.S. Nuclear Regulatory Commission in Reference 1. The additional information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the additional information provided in this submittal does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments contained in this submittal.

Should you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 8th day of April 2014.

Respectfully,



James Barstow
Director, Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachments: 1) Response to Request for Additional Information
2) Revised Technical Specification and Bases Pages

cc: USNRC Region I, Regional Administrator
USNRC Senior Resident Inspector, PBAPS
USNRC Senior Project Manager, PBAPS
R. R. Janati, Commonwealth of Pennsylvania
S. T. Gray, State of Maryland

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Revision of Normal Heat Sink Technical Specification
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bcc: P. Steinhauer, PSEG
Sr. Vice President, Mid-Atlantic Operations
Site Vice President-PBAPS
Plant Manager-PBAPS
Director, Operations-PBAPS
Director, Engineering
Director, Site Engineering-PBAPS
Manager, Regulatory Assurance-PBAPS
Manager, Licensing
Commitment Coordinator - KSA 3-E
Records Management - KSA
Director, Work Management - PBAPS

Attachment 1

Response to Request for Additional Information

Question:

1. 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 interval 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?

Response:

- a) In accordance with the Peach Bottom Atomic Power Station (PBAPS) National Pollutant Discharge Elimination System (NPDES) Permit No. PA0009733, PBAPS is required to monitor and report the temperature at the end of the discharge channel with at least one temperature measurement every 4 hours. The 4-hour data is used in a 24-hour average that is reported monthly to the state environmental agency (Pennsylvania Department of Environmental Protection) for environmental monitoring purposes. However, the permit provides relief to measure the data once per day if the discharge temperature is below 47°F. The purpose of the NPDES permit, in part, is to provide monitoring of the thermal discharge from the PBAPS station for environmental protection. The permit allows relief from the 4-hour monitoring when below 47°F due to the lower environmental risks below 47°F.
- b) PJM Interconnection (the electricity grid operator for more than 61 million people in 13 states and the District of Columbia) issues Hot Weather Alerts to "prepare personnel and facilities for extreme hot and/or humid weather conditions which may cause capacity requirements/unit unavailability to be substantially higher than forecast and are expected to persist for an extended period." When the PJM Interconnection officially announces a Capacity Emergency or Weather/Environmental Emergency (i.e., a "Hot Weather Alert"),

the Generation Dispatcher notifies the Main Control Room personnel via an "all-call". These alerts may be issued a few days ahead of the anticipated hot weather.

- c) Condition B for Technical Specification 3.7.2 has been revised from the original submittal to include a requirement for hourly monitoring when the temperature exceeds 90°F, but is less than or equal to 92°F as currently implemented in the PBAPS Technical Specifications. Revised Technical Specification and Bases pages that support this change are contained in Attachment 2.
- d) See response to c) above.

Question:

2. 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.

Response:

The loads reviewed to determine the margin on river temperature were the Emergency Diesel Generator (EDG) heat exchangers, Core Spray pumps (for Net Positive Suction Head (NPSH)) and Residual Heat Removal (RHR) pumps (for NPSH). Based on calculation review, it was determined that RHR NPSH requirements were limiting.

A minimum of 3°F river temperature margin has been determined. The NPSH margin in the RHR NPSH calculation was reduced to zero and the corresponding suppression pool temperature was determined. The temperature difference between the original suppression pool temperature from the calculation and this zero margin temperature was then correlated to an increase in river temperature above the 92°F utilized as the basis for the original suppression pool temperature. This increase in river temperature is the available river temperature margin.

The Extended Power Uprate (EPU) project utilized 92°F in their analyses and as a result of the EPU modifications, margins will be greater.

Attachment 2

Revised Technical Specification and Bases Pages

Revised Pages (Units 2 and 3)

3.7-3

B 3.7-8

B 3.7-8a

3.7 PLANT SYSTEMS

3.7.2 Emergency Service Water (ESW) System and Normal Heat Sink

LC0 3.7.2 Two ESW subsystems and normal heat sink shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ESW subsystem inoperable.	A.1 Restore ESW subsystem to OPERABLE status.	7 days
B. Water temperature of the normal heat sink is $> 90^{\circ}\text{F}$ and $\leq 92^{\circ}\text{F}$.	B.1 92 Verify water temperature of the normal heat sink is $\leq 90^{\circ}\text{F}$ averaged over the previous 24 hour period.	Once per hour
C. Required Action and associated Completion Time of Condition A or B not met. <u>OR</u> Both ESW subsystems inoperable. <u>OR</u> Normal heat sink inoperable [for reasons other than condition B].	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

BASES

APPLICABILITY (continued) In MODES 4 and 5, the OPERABILITY requirements of the ESW System and normal heat sink are determined by the systems they support, and therefore the requirements are not the same for all facets of operation in MODES 4 and 5. Thus, the LCOs of the systems supported by the ESW System and normal heat sink will govern ESW System and normal heat sink OPERABILITY requirements in MODES 4 and 5.

ACTIONS

A.1

With one ESW subsystem inoperable, the ESW subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE ESW subsystem is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE ESW subsystem could result in loss of ESW function.

The 7 day Completion Time is based on the redundant ESW System capabilities afforded by the OPERABLE subsystem, the low probability of an event occurring during this time period, and is consistent with the allowed Completion Time for restoring an inoperable DG.

B.1

92

With water temperature of the normal heat sink $> 90^{\circ}\text{F}$ and $\leq 92^{\circ}\text{F}$, 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 $\leq 90^{\circ}\text{F}$~~ . To ensure that the 92°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. If the water temperature of the normal heat sink exceeds 90°F ~~when averaged over the previous 24 hour period or the water temperature of the normal heat sink exceeds 92°F~~ , Condition C must be entered immediately.

(continued)

BASES

ACTIONS
(continued)

C.1 and C.2

If the ESW System cannot be restored to OPERABLE status within the associated Completion Time, or both ESW subsystems are inoperable, or the normal heat sink is inoperable, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE
REQUIREMENTS

SR 3.7.2.1

This SR verifies the water level in the pump bay of the pump structure to be sufficient for the proper operation of the ESW pumps (the pump's ability to meet the minimum flow rate and anticipatory actions required for flood conditions are

(continued)

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C. Required Action and associated Completion Time of Condition A or B not met. <u>OR</u> Both ESW subsystems inoperable. <u>OR</u> Normal heat sink inoperable [for reasons other than condition B].	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

BASES

APPLICABILITY (continued) In MODES 4 and 5, the OPERABILITY requirements of the ESW System and normal heat sink are determined by the systems they support, and therefore the requirements are not the same for all facets of operation in MODES 4 and 5. Thus, the LCOs of the systems supported by the ESW System and normal heat sink will govern ESW System and normal heat sink OPERABILITY requirements in MODES 4 and 5.

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The 7 day Completion Time is based on the redundant ESW System capabilities afforded by the OPERABLE subsystem, the low probability of an event occurring during this time period, and is consistent with the allowed Completion Time for restoring an inoperable DG.

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(continued)

BASES

ACTIONS
(continued)

C.1 and C.2

If the ESW System cannot be restored to OPERABLE status within the associated Completion Time, or both ESW subsystems are inoperable, or the normal heat sink is inoperable, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

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