



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

June 5, 2014

Mr. Michael J. Pacilio  
President and Chief Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 - ISSUANCE  
OF AMENDMENTS RE: REVISE NORMAL HEAT SINK OPERABILITY  
REQUIREMENTS (TAC NOS. ME9085 AND ME9086)

Dear Mr. Pacilio:

The Commission has issued the enclosed Amendment Nos. 291 and 294 to Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station, Units 2 and 3. These amendments consist of changes to the Technical Specifications (TSs) and Facility Operating Licenses in response to your application dated July 18, 2012, as supplemented by letters dated January 17, 2013, April 23, 2013, April 8, 2014, and April 28, 2014.

The amendments revise the TSs to change the operability requirements for the normal heat sink.

A copy of the safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly *Federal Register* Notice.

Sincerely,

A handwritten signature in black ink, appearing to read "R B Ennis".

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

Docket Nos. 50-277 and 50-278

Enclosures:

1. Amendment No. 291 to Renewed DPR-44
2. Amendment No. 294 to Renewed DPR-56
3. Safety Evaluation

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

EXELON GENERATION COMPANY, LLC

PSEG NUCLEAR LLC

DOCKET NO. 50-277

PEACH BOTTOM ATOMIC POWER STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 291  
Renewed License No. DPR-44

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC (Exelon Generation Company), and PSEG Nuclear LLC (the licensees), dated July 18, 2012, as supplemented by letters dated January 17, 2013, April 23, 2013, April 8, 2014, and April 28, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

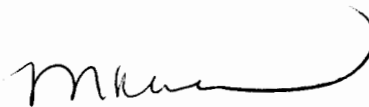
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Renewed Facility Operating License No. DPR-44 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 291, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:  
Changes to the Technical Specifications  
and Facility Operating License

Date of Issuance: June 5, 2014

ATTACHMENT TO LICENSE AMENDMENT NO. 291  
RENEWED FACILITY OPERATING LICENSE NO. DPR-44

DOCKET NO. 50-277

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove  
3

Insert  
3

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove  
3.7-3  
3.7-4

Insert  
3.7-3  
3.7-4

- (5) Exelon Generation Company, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear material as may be produced by operation of the facility, and such Class B and Class C low-level radioactive waste as may be produced by the operation of Limerick Generating Station, Units 1 and 2.

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 of Part 50, and Section 70.32 of Part 70; all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

- (1) Maximum Power Level

Exelon Generation Company is authorized to operate the Peach Bottom Atomic Power Station, Unit 2, at steady state reactor core power levels not in excess of 3514 megawatts thermal.

- (2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 291, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

- (3) Physical Protection

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans<sup>1</sup>, submitted by letter dated May 17, 2006, is entitled: "Peach Bottom Atomic Power Station Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, and Independent Spent Fuel Storage Installation Security Program, Revision 3." The set contains Safeguards Information protected under 10 CFR 73.21.

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Exelon Generation Company CSP was approved by License Amendment No. 283.

- (4) Fire Protection

The Exelon Generation Company shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report for the facility, and as approved in the NRC Safety Evaluation Report (SER) dated May 23, 1979, and Supplements dated August 14, September 15, October 10 and November 24, 1980, and in the NRC SERs dated September 16, 1993, and August 24, 1994, subject to the following provision:

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<sup>1</sup> The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

3.7 PLANT SYSTEMS

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

LCO 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. Required Action and associated Completion Time not met.  <u>OR</u>  Both ESW subsystems inoperable.  <u>OR</u>  Normal heat sink inoperable.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 4.	12 hours    36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.2.1 Verify the water level in the pump bays of the pump structure is $\geq 98.5$ ft Conowingo Datum (CD) and $\leq 113$ ft CD.	In accordance with the Surveillance Frequency Control Program.
SR 3.7.2.2 Verify the water temperature of normal heat sink is $\leq 92^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program.  <u>AND</u>  Hourly when water temperature of normal heat sink is $> 90^{\circ}\text{F}$ .
SR 3.7.2.3 -----NOTE----- Isolation of flow to individual components does not render ESW System inoperable. -----  Verify each ESW subsystem manual and power operated valve in the flow paths servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program.
SR 3.7.2.4 Verify each ESW subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program.



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

EXELON GENERATION COMPANY, LLC

PSEG NUCLEAR LLC

DOCKET NO. 50-278

PEACH BOTTOM ATOMIC POWER STATION, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 294  
Renewed License No. DPR-56

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Exelon Generation Company, LLC (Exelon Generation Company), and PSEG Nuclear LLC (the licensees), dated July 18, 2012, as supplemented by letters dated January 17, 2013, April 23, 2013, April 8, 2014, and April 28, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 2



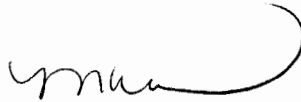
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Renewed Facility Operating License No. DPR-56 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 294, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:  
Changes to the Technical Specifications  
and Facility Operating License

Date of Issuance: June 5, 2014

ATTACHMENT TO LICENSE AMENDMENT NO. 294  
RENEWED FACILITY OPERATING LICENSE NO. DPR-56  
DOCKET NO. 50-278

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove  
3

Insert  
3

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove  
3.7-3  
3.7-4

Insert  
3.7-3  
3.7-4

- (5) Exelon Generation Company, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear material as may be produced by operation of the facility, and such Class B and Class C low-level radioactive waste as may be produced by the operation of Limerick Generating Station, Units 1 and 2.

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 of Part 50, and Section 70.32 of Part 70; all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

(1) Maximum Power Level

Exelon Generation Company is authorized to operate the Peach Bottom Atomic Power Station, Unit No. 3, at steady state reactor core power levels not in excess of 3514 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 294, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.<sup>1</sup>

(3) Physical Protection

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans<sup>2</sup>, submitted by letter dated May 17, 2006, is entitled: "Peach Bottom Atomic Power Station Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, and Independent Spent Fuel Storage Installation Security Program, Revision 3." The set contains Safeguards Information protected under 10 CFR 73.21.

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Exelon Generation Company CSP was approved by License Amendment No. 283.

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<sup>1</sup>Licensed power level was revised by Amendment No. 250, dated November 22, 2002, and will be implemented following the 14<sup>th</sup> refueling outage currently scheduled for Fall 2003.

<sup>2</sup>The training and Qualification Plan and Safeguards Contingency Plan and Appendices to the Security Plan.

3.7 PLANT SYSTEMS

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

LCO 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. Required Action and associated Completion Time not met.  <u>OR</u>  Both ESW subsystems inoperable.  <u>OR</u>  Normal heat sink inoperable.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 4.	12 hours    36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.2.1    Verify the water level in the pump bays of the pump structure is $\geq 98.5$ ft Conowingo Datum (CD) and $\leq 113$ ft CD.	In accordance with the Surveillance Frequency Control Program.
SR 3.7.2.2    Verify the water temperature of normal heat sink is $\leq 92^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program.  <u>AND</u>  Hourly when water temperature of normal heat sink is $> 90^{\circ}\text{F}$ .
SR 3.7.2.3    -----NOTE----- Isolation of flow to individual components does not render ESW System inoperable. -----  Verify each ESW subsystem manual and power operated valve in the flow paths servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program.
SR 3.7.2.4    Verify each ESW subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 291 AND 294

TO RENEWED FACILITY OPERATING LICENSE NOS. DPR-44 AND DPR-56

EXELON GENERATION COMPANY, LLC

PSEG NUCLEAR LLC

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277 AND 50-278

1.0 INTRODUCTION

By application dated July 18, 2012, as supplemented by letters dated January 17, 2013, April 23, 2013, April 8, 2014, and April 28, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12200A388, ML13018A225, ML13114A162, ML14099A537, and ML14119A303, respectively), Exelon Generation Company, LLC (Exelon, the licensee), requested changes to the Technical Specifications (TSs) and Facility Operating Licenses (FOLs) for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3.

The proposed amendment would revise the TSs for PBAPS, Units 2 and 3, to change the operability requirements for the normal heat sink (NHS). The specific changes are discussed in detail in safety evaluation (SE) Section 2.2.

The supplements dated January 17, 2013, April 23, 2013, April 8, 2014, and April 28, 2014, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC or the Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 4, 2012 (77 FR 53928).

2.0 REGULATORY EVALUATION

2.1 System Description

The NHS for PBAPS is the Conowingo Pond. The Conowingo Pond is a reservoir on the Susquehanna River formed by the Conowingo Dam (located approximately 8.5 miles downstream of the PBAPS site) and the Holtwood Dam (located approximately 6 miles upstream of the PBAPS site).

As discussed in Section 3.0 of Attachment 1 to the licensee's application dated July 18, 2012, the NHS supplies cooling water to the non-safety-related Circulating Water System and the non-safety-related Service Water System. The NHS also supplies the cooling water for the safety-related High Pressure Service Water (HPSW) System and the safety-related Emergency Service Water (ESW) System. The following safety-related components are cooled by the NHS following an accident or abnormal operational transient:

HPSW System

Residual Heat Removal (RHR) Heat Exchangers  
HPSW Pump Motor Oil Coolers

ESW System

RHR Pump Room Coolers  
RHR Pump Seal Coolers  
Core Spray (CS) Pump Room Coolers  
High Pressure Coolant Injection (HPCI) Pump Room Coolers  
Reactor Core Isolation Cooling (RCIC) Pump Room Coolers  
Emergency Diesel Generator (EDG) Heat Exchangers  
CS Pump Motor Oil Coolers

During post-accident conditions, the RHR heat exchangers perform the long-term containment heat removal function. As described in the PBAPS Updated Final Safety Analysis Report (UFSAR) Section 10.7, the HPSW system is the safety-related cooling system that removes heat by supplying cooling water to the RHR heat exchangers under post-accident conditions.

As discussed in Section 3.0 of Attachment 1 to the licensee's application dated July 18, 2012, TS 3.7.2 requires the NHS to be operable in Modes 1, 2, and 3. The purpose of this requirement is to ensure that the heat removal capability of the HPSW and ESW systems is adequate to maintain the design basis temperatures of safety-related equipment relied on to mitigate the consequences of an accident or operational transient.

2.2 Licensee's Proposed TS Changes

The proposed amendment would revise TS 3.7.2, "Emergency Service Water (ESW) System and Normal Heat Sink," to change the operability requirements for the NHS. 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 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 considered operable as long as the maximum water temperature was less than or equal to 92 °F. The specific changes are shown below.

Currently, the Actions for LCO 3.7.2 read as follows:

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°F and ≤ 92°F.	B.1 Verify water temperature of the normal heat sink is ≤ 90°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

As shown in the Attachment to the licensee's letter dated April 28, 2014, the proposed amendment would revise the LCO 3.7.2 Actions to read as follows:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ESW subsystem inoperable.	A.1 Restore ESW subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.  <u>OR</u>  Both ESW subsystems inoperable.  <u>OR</u>  Normal heat sink inoperable.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be In MODE 4.	12 hours    36 hours



Currently, SR 3.7.2.2 reads as follows:

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.7.2.2	Verify the average water temperature of normal heat sink is $\leq 90^{\circ}\text{F}$ .	In accordance with the Surveillance Frequency Control Program.

As shown in the licensee's letter dated April 28, 2014, the proposed amendment would revise SR 3.7.2.2 to remove the word "average," change the NHS limit to  $92^{\circ}\text{F}$ , and add an hourly surveillance when temperature is greater than  $90^{\circ}\text{F}$ , as shown below:

<b>SURVEILLANCE</b>		<b>FREQUENCY</b>
SR 3.7.2.2	Verify the water temperature of normal heat sink is $\leq 92^{\circ}\text{F}$	In accordance with the Surveillance Frequency Control Program.  <u>AND</u>  Hourly when water temperature of normal heat sink is $> 90^{\circ}\text{F}$ .

The attachment to the licensee's letter dated April 28, 2014, provided revised TS Bases pages to be implemented with the associated TS changes. These pages were provided for information only. Changes to the TS Bases would be made in accordance with the TS Bases Control Program.

In Section 2.0 of Attachment 1 to the licensee's application dated July 18, 2012, the licensee provided the following discussion regarding the reasons for the amendment request:

During the summer of 2012, the NHS temperature for the intake of PBAPS, Units 2 and 3 has approached  $90^{\circ}\text{F}$  earlier than expected. The cause for the temperature increase to the NHS has been a long period of time with low precipitation (rain) resulting in a sustained reduction in Susquehanna River flow. The abnormally hot weather conditions for an extended period of time have resulted in NHS temperatures that were close to  $90^{\circ}\text{F}$ , which would have resulted in entering the Required Action which could lead to a required shutdown of PBAPS, Units 2 and 3.

A shutdown of both units resulting from exceeding the NHS average temperature requirement without exceeding the maximum temperature of 92°F would result in an unnecessary plant transient and increase the possibility of a disturbance to the PBAPS off-site electrical power sources and the regional electrical power distribution system.

### 2.3 Regulatory Requirements and Guidance

The construction permit for PBAPS, Units 2 and 3, was issued by the Atomic Energy Commission (AEC) on January 31, 1968. As discussed in Appendix H to the UFSAR, during the construction/licensing process, both units were evaluated against the then-current AEC draft of the 27 General Design Criteria (GDC) issued in November 1965. On July 11, 1967, the AEC published for public comment, in the *Federal Register* (32 FR 10213), a revised and expanded set of 70 draft GDC (hereinafter referred to as the "draft GDC"). Appendix H of the PBAPS UFSAR contains an evaluation of the design basis of PBAPS, Units 2 and 3, against the draft GDC. The licensee concluded that PBAPS, Units 2 and 3, conforms to the intent of the draft GDC.

On February 20, 1971, the AEC published in the *Federal Register* (36 FR 3255), a final rule that added Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "General Design Criteria for Nuclear Power Plants" (hereinafter referred to as the "final GDC"). Differences between the draft GDC and final GDC included a consolidation from 70 to 64 criteria. As discussed in the NRC's Staff Requirements Memorandum for SECY-92-223, dated September 18, 1992 (ADAMS Accession No. ML003763736), the Commission decided not to apply the final GDC to plants with construction permits issued prior to May 21, 1971. At the time of promulgation of Appendix A to 10 CFR Part 50, the Commission stressed that the final GDC were not new requirements and were promulgated to more clearly articulate the licensing requirements and practice in effect at that time. Each plant licensed before the final GDC were formally adopted was evaluated on a plant-specific basis, determined to be safe, and licensed by the Commission.

The licensees for PBAPS, Units 2 and 3, have made changes to the facility over the life of the plant that may have invoked the final GDC. The extent to which the final GDC have been invoked can be found in specific sections of the UFSAR and in other plant-specific design and licensing basis documentation.

Based on a review of Appendix H to the PBAPS UFSAR, the NRC staff identified the following GDCs as being applicable to the proposed amendment:

- Draft GDC-10, "Containment," which requires that reactor containment be designed to sustain the initial effects of gross equipment failures, such as a large coolant boundary break, without loss of required integrity and, together with other engineered safety features as may be necessary, to retain functional capability for as long as the situation requires.
- Draft GDC-41, "Engineered Safety Features Performance Capability," which requires that engineered safety features, such as containment heat removal systems, shall provide

sufficient performance capability to accommodate partial loss of installed capacity and still fulfill the required safety function.

- Draft GDC-49, "Containment Design Basis," which requires that the containment structure, and any necessary containment heat removal systems shall be designed so that the containment structure can accommodate without exceeding the design leakage rate the pressures and temperatures resulting from the largest credible energy release following a loss-of-coolant accident (LOCA).

The NRC staff used the following NUREG-0800, "Standard Review Plan" (SRP) sections for this review:

- SRP Section 6.2.1, "Containment Functional Design," Revision 3, dated March 2007 (ADAMS Accession No. ML070220505).
- SRP Section 6.2.1.1.C, "Pressure-Suppression Type BWR [boiling-water reactor] Containments," Revision 7, dated March 2007 (ADAMS Accession No. ML063600403).
- SRP Section 6.2.2, "Containment Heat Removal Systems," Revision 5, dated March 2007 (ADAMS Accession No. ML070160661).
- SRP Section 9.2.5, "Ultimate Heat Sink," Revision 3, dated March 2007 (ADAMS Accession No. ML070550048).

NRC Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," dated July 18, 1989 (ADAMS Accession No. ML031150348), requested that licensees establish a routine inspection and maintenance program to ensure that corrosion, erosion, protective coating failure, silting, and biofouling/tube plugging cannot degrade the performance of the safety-related systems supplied by service water. These issues relate to the evaluation of safety-related heat exchangers using service water and whether they have the potential for fouling, thereby causing degradation in performance, and the mandate that there exist a permanent plant test and inspection program to accomplish and maintain this evaluation.

The regulations in 10 CFR 50.36, set forth NRC requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. The regulation does not specify the particular requirements to be included in a plant's TSs.

As discussed in 10 CFR 50.36(c)(2), LCOs are the lowest functional capability or performance level of equipment required for safe operation of the facility. When LCOs are not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the LCO can be met.

As discussed in 10 CFR 50.36(c)(3), 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.

In general, there are two classes of changes to TSs: (1) changes needed to reflect contents of the design basis (TSs are derived from the design basis); and (2) voluntary changes to take advantage of the evolution in policy and guidance as to the required content and preferred format of TSs. The proposed amendment deals with the first class of change, namely, a change that is necessary to reflect the contents of the design basis.

In determining the acceptability of the proposed amendment, the NRC staff used plant-specific licensing basis information, as well as the accumulation of generically-approved guidance in the improved Standard Technical Specifications (STS), specifically, NUREG-1433, "Standard Technical Specifications, Revision 4, General Electric BWR/4 Plants," April 2012.

### 3.0 TECHNICAL EVALUATION

#### *NHS TS Temperature Limit Design Basis Considerations*

Temperature limits on the NHS are specified in the TSs to ensure that the heat removal capability of the HPSW and ESW systems is adequate to allow the associated safety-related equipment, that is relied upon to mitigate the consequences of an accident or operational transient, to perform its design function. The NHS meets Criterion 3 of 10 CFR 50.36(c)(2)(ii), which requires that a TS LCO be established for a structure, system or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident (DBA) or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

#### *Previous and Current PBAPS NHS TS Requirements*

Prior to 2002, PBAPS SR 3.7.2.2 required verification of the NHS to be  $\leq 90$  °F. This limit was to ensure long-term cooling of containment and to support equipment needed to mitigate a DBA.

In 2002, the licensee submitted a license amendment request (LAR) for PBAPS, Units 2 and 3, to change TS 3.7.2 by adding an ACTION statement to be in effect when the NHS temperature was  $> 90$  °F and  $\leq 92$  °F. The ACTION statement would require verifying the NHS to be  $\leq 90$  °F averaged over the previous 24 hours. The new ACTION statement allowed the NHS temperature to exceed 90 °F under the conditions of the new ACTION statement. If the NHS exceeded 92 °F, or if the average temperature over the previous 24 hours exceeded 90 °F, then plant shutdown and cool down are required. The format for the change was based upon Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, "Allowed Outage Time-Ultimate Heat Sink", TSTF-330, Revision 3, dated October 16, 2000, which was incorporated into NUREG-1433, Revision 4. The 24-hour average limit was based on ensuring long-term cooling capability of the NHS to remove heat from containment after a DBA, as long as the maximum allowed value (specified in the Required Action) was not exceeded. The licensee justified raising the maximum allowed value to 92 °F and inserting a new 24-hour average limit of 90 °F in its 2002 LAR. On July 29, 2002, the NRC staff approved

the LAR in Amendments Nos. 244 and 248 (ADAMS Accession No. ML021080050). The NRC staff's SE states, in part, that:

The licensee performed technical evaluations in support of the proposed TS change and determined that a reasonable degree of equipment degradation can still be assumed while demonstrating that the affected safety-related components could continuously perform their design function at cooling water temperatures up to 92 °F. The licensee stated in the application that new limits for equipment degradation will be procedurally controlled to ensure that the affected components would continue to function at the increased cooling water temperature. These limits will not require increased testing or cleaning of heat exchangers beyond the normal intervals to ensure that design margins are maintained. All heat exchangers addressed in this evaluation will be maintained capable of removing their respective design-basis heat loads at the elevated (92 °F) cooling water temperature in accordance with the PBAPS Units 2 and 3 program implemented in response to GL 89-13, "Service Water System Problems Affecting Safety-Related Equipment."

#### *Current PBAPS Safety Analysis Assumptions*

The licensee's application dated July 18, 2012, states that the proposed amendment does not alter any assumptions on which the current plant safety analysis is based. Specifically, all design-basis analyses currently 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 addition, none of the current analyses use the 24-hour rolling average of 90 °F.

#### *RHR Heat Exchangers*

With respect to the RHR heat exchangers, the licensee's application dated July 18, 2012, states, in part, that:

- The PBAPS plant-specific analyses for the DBAs and non-break events which require containment cooling assume a minimum RHR heat exchanger heat transfer capability that is based upon a conservative amount of overall thermal fouling and a set percentage of the tube population plugged. The RHR heat exchangers (e.g., fouling and tube plugging) are maintained better than assumed in the containment heat removal analysis and in compliance with the GL 89-13 testing program.
- The RHR heat exchangers are capable of maintaining the required heat transfer capability at an NHS temperature of 92 °F.

Based on the above information, the NRC staff finds that the proposed amendment would not affect the capability of the RHR heat exchangers to perform their design basis heat removal function.

### *EDG Heat Exchangers*

With respect to the EDG heat exchangers, the licensee's application dated July 18, 2012, states, in part, that:

- Engineering analysis established permissible fouling factors for the EDG heat exchangers based upon the limiting conditions for electrical loading, combustion air inlet temperature, and cooling water flow and temperature. Sufficient margin exists between measured fouling and permissible fouling to allow the EDG heat exchangers to perform their design basis function at an NHS temperature of 92 °F at any point during the heat exchanger operating cycle between scheduled cleanings.
- Compliance with the acceptance criteria for fouling of the EDG heat exchangers is controlled in accordance with the GL 89-13 testing program, thereby ensuring that the established limits for heat exchanger fouling are not reached.

Based on the above information, the NRC staff finds that the proposed amendment would not affect the capability of the EDG heat exchangers to perform their design basis heat removal function.

### *RHR and CS Pump Room Coolers*

With respect to the RHR and CS pump room coolers, the licensee's application dated July 18, 2012, states, in part, that:

- The RHR and CS pump room coolers have been calculated to be capable of maintaining acceptable pump room post-accident temperature profiles assuming the room coolers in each pump room are supplied with cooling water at a temperature of 95 °F.
- Periodic testing is performed to verify that the equipment performance assumed in the analyses is maintained. The testing is performed in compliance with the GL 89-13 testing program.

Based on the above information, the NRC staff finds that the proposed amendment would not affect the capability of the RHR and CS pump room coolers to perform their design basis heat removal function.

### *HPSW and CS Pump Motor Oil Coolers*

With respect to the HPSW and CS pump motor oil coolers, the licensee's application dated July 18, 2012, states, in part, that:

- Sufficient margin exists for the affected motor oil coolers to perform their design basis function at a cooling water inlet temperature of 92 °F.

- Periodic testing is performed to verify that the required equipment capability is maintained at the NHS temperature limit. The testing is performed in compliance with the GL 89-13 testing program.

Based on the above information, the NRC staff finds that the proposed amendment would not affect the capability of the HPSW and CS Pump Motor Oil Coolers to perform their design basis heat removal function.

#### *HPCI and RCIC Pump Room Coolers and RHR Pump Seal Coolers*

The licensee's application dated July 18, 2012, stated that the HPCI pump room coolers, the RCIC pump room coolers and the RHR pump seal coolers, although cooled by the NHS, are not required to support operability of their supported safety systems according to the licensee's calculations. As such, the NRC staff finds the proposed amendment would not affect the capability of these coolers to perform their design basis heat removal functions.

#### *Containment Pressure and Temperature Response*

The NRC staff finds that the proposed amendment would not affect the DBA containment peak pressures and temperatures because these peaks occur during the initial blowdown during which the RHR heat exchangers are not in operation.

#### *Containment Heat Removal*

During post-accident DBA conditions, the RHR heat exchangers perform the long-term containment heat removal function. For the containment heat removal and emergency core cooling system net positive suction head (NPSH) analysis, the HPSW inlet temperature to the RHR heat exchanger is already based on a NHS temperature of 92 °F, as discussed in the licensee's letter dated January 17, 2013. Therefore, the proposed amendment would not affect the post-accident long-term containment heat removal analysis or the NPSH analysis.

#### *TS Changes*

The NRC staff has reviewed the proposed TS changes and finds them acceptable based on the following considerations:

- The proposed maximum NHS temperature limit of 92 °F, as specified in SR 3.7.2.2, does not alter any assumptions on which the current plant safety analysis is based.
- The requirement, in SR 3.7.2.2, to verify that the NHS temperature is less than or equal to 92 °F on an hourly basis, when the temperature is greater than 90 °F, is consistent with the existing monitoring frequency when NHS temperature is greater than 90 °F, as required by LCO Action B. As such, the NRC staff finds that the hourly surveillance frequency is a reasonable time interval to monitor NHS temperature variations in order to ensure that LCO 3.7.2 is met, and that the associated design basis assumptions remain valid.

- The deletion of the NHS temperature limit from LCO 3.7.2 (while retaining the limit in the SRs) is acceptable based on the guidance in NUREG-1433, STS 3.7.2.

### *Conclusion*

Based on the above evaluation, the NRC staff concludes that the proposed amendment is acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change SRs. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (77 FR 53928). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: A. Sallman  
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R. Ennis

Date: June 5, 2014



June 5, 2014

Mr. Michael J. Pacilio  
President and Chief Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 - ISSUANCE OF AMENDMENTS RE: REVISE NORMAL HEAT SINK OPERABILITY REQUIREMENTS (TAC NOS. ME9085 AND ME9086)

Dear Mr. Pacilio:

The Commission has issued the enclosed Amendment Nos. 291 and 294 to Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station, Units 2 and 3. These amendments consist of changes to the Technical Specifications (TSs) and Facility Operating Licenses in response to your application dated July 18, 2012, as supplemented by letters dated January 17, 2013, April 23, 2013, April 8, 2014, and April 28, 2014.

The amendments revise the TSs to change the operability requirements for the normal heat sink.

A copy of the safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly *Federal Register* Notice.

Sincerely,

**/RA/**

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

Docket Nos. 50-277 and 50-278

Enclosures:

1. Amendment No. 291 to Renewed DPR-44
2. Amendment No. 294 to Renewed DPR-56
3. Safety Evaluation

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