



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

April 3, 2017

Mr. Bryan C. Hanson
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: TURBINE CONDENSER – LOW VACUUM SCRAM
ALLOWABLE VALUE (CAC NOS. MF8790 AND MF8791)

Dear Mr. Hanson:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment Nos. 312 and 316 to Renewed Facility Operating License Nos. DPR-44 and DPR-56 for the Peach Bottom Atomic Power Station, Units 2 and 3, respectively. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated November 4, 2016, as supplemented by letters dated December 7, 2016, and March 13, 2017.

The amendments revise the Allowable Value for the Turbine Condenser – Low Vacuum scram function specified in TS Table 3.3.1.1-1, “Reactor Protection System Instrumentation.”

A copy of our 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
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-277 and 50-278

Enclosures:

1. Amendment No. 312 to Renewed DPR-44
2. Amendment No. 316 to Renewed DPR-56
3. Safety Evaluation

cc w/enclosures: Distribution via Listserv



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. 312
Renewed License No. DPR-44

1. The U.S. 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 November 4, 2016, as supplemented by letters dated December 7, 2016, and March 13, 2017, 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.

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. 312, 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 prior to startup from refueling outage P2R22, which is scheduled for completion in the fall of 2018.

FOR THE NUCLEAR REGULATORY COMMISSION



James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications
and Renewed Facility Operating License

Date of Issuance: April 3, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 312
PEACH BOTTOM ATOMIC POWER STATION, UNIT 2
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
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Insert
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Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove
3.3-8

Insert
3.3-8

- (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 3951 megawatts thermal.

- (2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 312, 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 plans¹, 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. 281 and modified by Amendment No. 301.

- (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:

¹ The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Pressure -High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 1085.0 psig
4. Reactor Vessel Water Level-Low (Level 3)	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≥ 1.0 inches
5. Main Steam Isolation Valve -Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 10% closed
6. Drywell Pressure -High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 2.0 psig
7. Scram Discharge Volume Water Level -High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 50.0 gallons
	5(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 50.0 gallons
8. Turbine Stop Valve -Closure	≥ 26.7% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 10% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure -Low	≥ 26.7% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≥ 500.0 psig
10. Turbine Condenser -Low Vacuum	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≥ 21.5 inches Hg vacuum
11. Deleted					
12. Reactor Mode Switch - Shutdown Position	1,2	1	G	SR 3.3.1.1.14 SR 3.3.1.1.17	NA
	5(a)	1	H	SR 3.3.1.1.14 SR 3.3.1.1.17	NA

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.



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. 316
Renewed License No. DPR-56

1. The U.S. 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 November 4, 2016, as supplemented by letters dated December 7, 2016, and March 13, 2017, 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.

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. 316, 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 prior to startup from refueling outage P3R21, which is scheduled for completion in the fall of 2017.

FOR THE NUCLEAR REGULATORY COMMISSION



James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications
and Renewed Facility Operating License

Date of Issuance: April 3, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 316
PEACH BOTTOM ATOMIC POWER STATION, UNIT 3
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
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Insert
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Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove
3.3-8

Insert
3.3-8

- (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 3951 megawatts thermal.

- (2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 316, 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 plans¹, 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 and modified by Amendment No. 304.

¹ The Training and Qualification Plan and Safeguards Contingency Plan and Appendices to the Security Plan.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Pressure - High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 1085.0 psig
4. Reactor Vessel Water Level - Low (Level 3)	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≥ 1.0 inches
5. Main Steam Isolation Valve - Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 10% closed
6. Drywell Pressure - High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 2.0 psig
7. Scram Discharge Volume Water Level - High	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 50.0 gallons
	5(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 50.0 gallons
8. Turbine Stop Valve - Closure	≥ 26.7% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 10% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	≥ 26.7% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≥ 500.0 psig
10. Turbine Condenser - Low Vacuum	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.15 SR 3.3.1.1.17 SR 3.3.1.1.18	≥ 21.5 inches Hg vacuum
11. Deleted					
12. Reactor Mode Switch - Shutdown Position	1,2	1	G	SR 3.3.1.1.14 SR 3.3.1.1.17	NA
	5(a)	1	H	SR 3.3.1.1.14 SR 3.3.1.1.17	NA

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 312 TO
RENEWED FACILITY OPERATING LICENSE NO. DPR-44 AND
AMENDMENT NO. 316 TO RENEWED FACILITY OPERATING LICENSE NO. 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 November 4, 2016, as supplemented by letters dated December 7, 2016, and March 13, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML16309A298, ML16342C455, and ML17072A369, respectively), Exelon Generation Company, LLC (Exelon, the licensee), submitted a license amendment request (LAR) for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3.

The amendments would revise the Allowable Value (AV) for the Turbine Condenser – Low Vacuum scram function specified in Technical Specification (TS) Table 3.3.1.1-1, “Reactor Protection System Instrumentation.” The licensee stated that the purpose of the proposed change is to minimize the potential for inadvertent scrams due to low condenser vacuum.

The supplemental letter dated March 13, 2017, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff’s original proposed no significant hazards consideration determination as published in the *Federal Register* on January 3, 2017 (82 FR 159).

2.0 REGULATORY EVALUATION

2.1 System Description

As discussed in the PBAPS Updated Final Safety Analysis Report (UFSAR), Sections 1.6.2.1, 7.1.3, and 7.2, the reactor protection system (RPS) initiates a rapid, automatic shutdown (i.e., scram) of the reactor if monitored parameters exceed their specified limits. The RPS scram limits the uncontrolled release of radioactive material from the fuel and nuclear system process barrier by terminating excessive temperature and pressure increases, following abnormal operational transients.

PBAPS TS 3.3.1.1, Reactor Protection System (RPS) Instrumentation,” specifies the TS requirements for the RPS instrumentation. In accordance with limiting condition for operation (LCO) 3.3.1.1, the RPS instrumentation for each function listed in TS Table 3.3.1.1-1 shall be operable. Table 3.3.1.1-1 lists the RPS functions that initiate a reactor scram. The table also lists the applicable operational modes, surveillance requirements (SRs), and AVs associated with each function. PBAPS TS Table 3.3.1.1-1, Function 10, “Turbine Condenser – Low Vacuum,” is required to be operable in Mode 1 and currently has an AV of ≥ 23.0 inches mercury (Hg) vacuum. The RPS turbine condenser - low vacuum signals are initiated from four pressure transmitters that provide inputs to the associated trip units.

As discussed in the UFSAR, Section 7.2, a condenser low vacuum condition trips the main turbine by providing a signal to automatically close the turbine stop valves. The purpose of the condenser low vacuum turbine trip is to protect the main condenser against overpressure on loss of condenser vacuum. In order to anticipate the transient and scram that results from the closure of the turbine stop valves, a condenser low vacuum condition initiates a reactor scram. The condenser low vacuum scram trip setting is selected to initiate a reactor scram prior to initiation of closure of the turbine stop valves.

Section 14.5.1 of the UFSAR discusses events that result directly in a significant nuclear system pressure increase as a result of a sudden reduction in steam flow while the reactor is operating at power. A loss of main condenser vacuum is one of the events evaluated. The worst case for the loss of main condenser vacuum event would occur if the loss of vacuum is instantaneous, with essentially simultaneous scrams from the condenser low vacuum signal and the turbine stop valve closure signal. However, the loss of condenser vacuum is not a bounding event for the parameters of main concern, fuel thermal margin, and margin to vessel overpressure. Consistent with the discussion in UFSAR, Section 14.5.1, the licensee’s application dated November 4, 2016, stated that the condenser low vacuum RPS scram function is not specifically credited in the PBAPS accident analyses. The licensee stated that this function is included in the TSs for the overall redundancy and diversity of the RPS.

2.2 Proposed Technical Specification Changes

Loss of condenser vacuum occurs when the condenser can no longer handle the heat input (e.g., loss of heat transfer capability). On August 25, 2014, the U.S. Nuclear Regulatory Commission (NRC or the Commission) approved an extended power uprate (EPU) for PBAPS, Units 2 and 3 (ADAMS Accession No. ML14133A046). As discussed in the licensee’s application dated November 4, 2016, due to increased steam flow at EPU conditions, condensate temperatures have increased, thus increasing condenser pressure (i.e., reduction in condenser vacuum). Increased condensate temperatures have resulted in power derates. Therefore, the licensee determined that it would be desirable to gain additional margin to reduce the likelihood of a scram due to a condenser low vacuum condition.

As discussed above, PBAPS TS Table 3.3.1.1-1, Function 10, “Turbine Condenser – Low Vacuum,” currently has an AV of ≥ 23.0 inches Hg vacuum. As discussed in the licensee’s supplement dated December 7, 2016, the proposed amendments would revise the AV for this function to be “ ≥ 21.5 inches Hg vacuum.” The licensee’s supplement dated December 7, 2016, stated that reducing the AV from 23.0 inches Hg vacuum to 21.5 inches Hg vacuum will provide

additional margin, thereby minimizing the potential for inadvertent scrams due to low condenser vacuum.

2.3 Regulatory Requirements

The NRC's regulatory requirements related to the content of the TSs are specified in 10 CFR 50.36, "Technical specifications." Pursuant to 10 CFR 50.36, TSs are required to include items in the following categories: (1) safety limits, limiting safety system settings (LSSS), and limiting control settings; (2) LCOs; (3) 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 stated in 10 CFR 50.36(c)(2)(i), LCOs are the lowest functional capability or performance levels of equipment required for safe operation of the facility. 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. The LCO action requirements establish those remedial actions that must be taken when the requirements of an LCO are not met.

As stated 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.

As discussed in 10 CFR 50.36(c)(1)(ii)(A), LSSS are settings for automatic protective devices related to those variables having significant safety functions. Where an LSSS is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protection action will correct the abnormal situation before a safety limit is exceeded. As discussed in the licensee's application dated November 4, 2016, the PBAPS TS Table 3.3.1.1-1, Function 10, "Turbine Condenser – Low Vacuum," RPS scram function serves as an anticipatory signal to the turbine stop valve closure scram function (i.e., TS Table 3.3.1.1-1, Function 8). As such, the condenser low vacuum scram function does not directly protect a safety limit.

2.4 Guidance Documents

The NRC staff used the guidance documents discussed below in its review of the subject LAR.

NUREG-0800, Standard Review Plan (SRP), Branch Technical Position 7-12, "Guidance on Establishing and Maintaining Instrument Setpoints," Revision 6, August 2016 (ADAMS Accession No. ML16019A200), provides guidance concerning review of issues related to a licensee's setpoint control program

NUREG-0800, SRP Section 15.2.1-15.2.5, "Loss of External Load; Turbine Trip; Loss of Condenser Vacuum; Closure of Main Steam Isolation Valve (BWR); and Steam Pressure Regulator Failure (Closed)," Revision 2, March 2007 (ADAMS Accession No. ML070300702), provides guidance for review of initiating events that result in unplanned decreases in heat removal by the secondary system.

NUREG-1433, Revision 4.0, "Standard Technical Specifications - General Electric BWR/4 Plants" (ADAMS Accession Nos. ML12104A192 and ML12104A193), provides guidance on TS format and content for General Electric boiling water reactor/4 (BWR/4) plants.

NRC Regulatory Issue Summary 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006 (ADAMS Accession No. ML051810077), provides guidance for LAR reviews of TS changes that affect LSSS instrumentation functions.

3.0 TECHNICAL EVALUATION

As discussed in the UFSAR, Section 7.2.4, RPS scram trip settings are selected that are far enough from normal operating levels such that spurious scrams and operating inconvenience are avoided. The licensee then verifies by analysis that the reactor fuel and nuclear system process barrier are protected by the scram trip settings.

As discussed in the Bases for TS 3.3.1.1, the analytical or design limits are derived from the limiting values of the process parameters obtained from the safety analysis or other appropriate documents. The AVs are derived from the analytical or design limits corrected for calibration, process, and instrument errors. The AV defines the limit at which a channel is considered operable. During periodic channel calibrations, if the actual setting is found to be less conservative than the AV, the channel is considered inoperable. In other words, the AV is used as the acceptance criteria in the applicable SRs in order to demonstrate operability of the function as required by the associated LCO.

The PBAPS setpoint methodology is contained in Exelon procedure CC-MA-103-2001, "Setpoint Methodology for Peach Bottom Atomic Power Station and Limerick Generating Station." This procedure is based on the NRC-approved General Electric Topical Report NEDC-31336P-A, "General Electric Instrument Setpoint Methodology," September 1996 (ADAMS Accession No. ML072950103, non-publicly available).¹ On pages 3 through 5 of Attachment 1 to Exelon's letter dated July 22, 2010 (ADAMS Accession No. ML102070196), the licensee summarized the differences between CC-MA-103-2001 and NEDC-31336P-A. As discussed in this letter, the licensee stated that the only difference between CC-MA-103-2001 and NEDC-31336P-A with respect to the equations for determination of the nominal trip setpoint (NTSP) and AV is that the equations in CC-MA-103-2001 include any dependent uncertainties, if they apply. In addition, the licensee stated that the CC-MA-103-2001 methodology also provides for the determination of an actual trip setpoint (ATSP) which, as necessary, adds margin to the NTSP value (i.e., ATSP is more conservative than the NTSP). The NRC staff compared the determination of the NTSP and AV as described in NEDC-31336P-A and CC-MA-103-2001. The NRC staff finds that the methods for determining the NTSP and AV in CC-MA-103-2001 are acceptable, since the methodology includes all the uncertainties contained in NEDC-31336P-A and also contains additional dependent uncertainties, as applicable. As such, calculations based on CC-MA-103-2001 will yield the same, or more, conservative results compared to NEDC-31336P-A.

¹ A publicly available version of NEDC-31336P-A (NEDO-31336-A) is available at ADAMS Accession No. ML073450560.

In the supplement dated December 7, 2016, the licensee provided a comparison of the parameters of interest with respect to the proposed AV change for the Turbine Condenser – Low Vacuum scram function. The following table is based on the information provided by the licensee. The parameters in the table are shown in order of increasing condenser pressure (i.e., as condenser vacuum decreases).

**Table 1
Current and Proposed Parameters**

Parameter	Current (Inches Hg Vacuum)	Proposed (Inches Hg Vacuum)
Normal Vacuum	27	27
Actual Trip Setpoint (Note 2)	23.45	21.95
Nominal Trip Setpoint (Note 2)	23.01	21.51
Allowable Value	23.0	21.5
Analytical Limit (Note 1)	22.0	20.5
Turbine Trip (reactor scram when power \geq 26.7%)	20	20
Turbine Bypass Valve Closure	7	7

Notes

- 1) The Analytical Limit is actually considered a design limit since it is not used in any accident analysis (i.e., does not protect a safety limit).
- 2) The supplement dated December 7, 2016, stated that these proposed Actual Trip Setpoint and Nominal Trip Setpoint values are subject to change as part of the licensee's formal calculation process for the setpoint change. However, the supplement dated March 13, 2017, confirmed that the calculation has been completed and that the values shown above did not change.

As shown in Table 1, the Analytical Limit (i.e., design limit) is proposed to be changed from 22.0 inches Hg to 20.5 inches Hg (a difference of 1.5 inches Hg). The same 1.5 inches Hg difference is reflected in the change in AV (i.e., 23.0 inches Hg to 21.5 inches Hg). As such, the proposed AV is based on the same amount of uncertainties that support the current AV specified in the TSs for the Turbine Condenser – Low Vacuum scram function.

Similar to the change in the design limit and change in AV, the ATSP has been changed by 1.5 inches Hg (i.e., from 23.45 inches Hg to 21.95 inches Hg). The NRC staff finds that the change in the ATSP will help reduce the potential for inadvertent scrams due to low condenser vacuum since there will be more margin between the normal condenser vacuum pressure and the ATSP.

The proposed change does not change the sequential relationship of the condenser low vacuum scram and the turbine trip. The low condenser vacuum scram will still occur prior to the turbine trip (i.e., 20.0 inches Hg). This is consistent with the current licensing basis in that the condenser low vacuum scram is an anticipatory trip prior to the scram that would result from closure of the main turbine stop valves.

Based on use of an acceptable setpoint methodology, as discussed above, the NRC staff concludes that the proposed AV has been determined in a manner that provides acceptance criteria sufficient to demonstrate whether the function is operable in accordance with LCO 3.3.1.1. As such, this provides reasonable assurance that the low condenser vacuum scram function will perform its intended function following successful completion of the associated SRs, consistent with the requirements in 10 CFR 50.36(c)(3). Based on these considerations, the NRC staff concludes that the proposed change to the AV 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 on February 17, 2017. 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 changes 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 (82 FR 159). 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 Contributor: R. Ennis

Date: April 3, 2017

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 – ISSUANCE OF AMENDMENTS RE: TURBINE CONDENSER – LOW VACUUM SCRAM ALLOWABLE VALUE (CAC NOS. MF8790 AND MF8791) DATED APRIL 3, 2017

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