



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

June 30, 2015

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: ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE (TSTF) TRAVELER TSTF-523, "GENERIC LETTER 2008-01, MANAGING GAS ACCUMULATION" (TAC NOS. MF4410 AND MF4411)

Dear Mr. Hanson:

The Commission has issued the enclosed Amendment Nos. 297 and 300 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 10, 2014, as supplemented by letter dated March 23, 2015.

The amendments revise and add Technical Specification (TS) surveillance requirements to address the concerns discussed in Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008. The TS changes are based on TS Task Force (TSTF) Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," dated February 21, 2013.

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 "RBE", with a stylized flourish at the end.

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. 297 to Renewed DPR-44
2. Amendment No. 300 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. 297
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 10, 2014, as supplemented by letter dated March 23, 2015, 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. 297, 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 by May 31, 2016.

FOR THE NUCLEAR REGULATORY COMMISSION



Douglas A. Broaddus, 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 30, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 297

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 marginal lines indicating the areas 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
3.4-18
3.4-20
3.5-4
3.5-10
3.5-13
3.6-28
3.6-30
3.6-30b
3.9-12
3.9-15

Insert
3.4-18
3.4-20
3.5-4
3.5-10
3.5-13
3.6-28
3.6-30
3.6-30b
3.9-12
3.9-15

- (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. 297, 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.

(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.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.4.7.1 -----NOTE----- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. ----- Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.4.7.2 -----NOTE----- 1. Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. 2. HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--|
| B. No RHR shutdown cooling subsystem in operation. <u>AND</u> No recirculation pump in operation. | B.1 Verify reactor coolant circulating by an alternate method. <u>AND</u> B.2 Monitor reactor coolant temperature and pressure. | 1 hour from discovery of no reactor coolant circulation <u>AND</u> Once per 12 hours thereafter Once per hour |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.4.8.1 Verify one required RHR shutdown cooling subsystem or recirculation pump is operating. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.4.8.2 -----NOTE----- HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|--|
| SR 3.5.1.1 | Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.5.1.2 | -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.5.1.3 | Verify ADS nitrogen supply header pressure is ≥ 85 psig. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.5.1.4 | Verify the LPCI cross tie valve is closed and power is removed from the valve operator. | In accordance with the Surveillance Frequency Control Program. |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.5.2.2 Verify, for each required core spray (CS) subsystem, the:</p> <p>a. Suppression pool water level is ≥ 11.0 ft; or</p> <p>b. -----NOTE----- Only one required CS subsystem may take credit for this option during OPDRVs. ----- Condensate storage tank water level is ≥ 17.3 ft.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.2.3 Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.2.4 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |

(continued)

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| <p>SR 3.5.3.1 Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.3.2 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.3.3 -----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----- Verify, with reactor pressure ≤ 1053 psig and ≥ 940 psig, the RCIC pump can develop a flow rate ≥ 600 gpm against a system head corresponding to reactor pressure.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.3.4 -----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----- Verify, with reactor pressure ≤ 175 psig, the RCIC pump can develop a flow rate ≥ 600 gpm against a system head corresponding to reactor pressure.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|--|
| SR 3.6.2.3.1 | Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.3.2 | Verify each required RHR pump develops a flow rate $\geq 8,600$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode. | In accordance with the Inservice Testing Program |
| SR 3.6.2.3.3 | Verify manual transfer capability of power supply for the RHR motor-operated flow control valve and the RHR cross-tie motor-operated valve from the normal source to the alternate source. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.3.4 | <p>-----NOTE----- HPSW system related components are excluded. -----</p> <p>Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.6.2.4.1 Verify each RHR suppression pool spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.4.2 Verify each suppression pool spray nozzle is unobstructed. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.4.3 Verify manual transfer capability of power supply for the RHR motor-operated flow control valve and the RHR cross-tie motor-operated valve from the normal source to the alternate source. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.4.4 -----NOTE----- HPSW system related components are excluded. ----- Verify RHR suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|--|
| SR 3.6.2.5.1 | Verify each RHR drywell spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.5.2 | Verify each drywell spray nozzle is unobstructed. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.5.3 | Verify manual transfer capability of power supply for the RHR motor-operated flow control valve and the RHR cross-tie motor-operated valve from the normal source to the alternate source. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.5.4 | <p>-----NOTE----- HPSW system related components are excluded. -----</p> <p>Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.9.7.1 Verify one RHR shutdown cooling subsystem is operating. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.9.7.2 -----NOTE----- HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.9.8.1 Verify one RHR shutdown cooling subsystem is operating. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.9.8.2 -----NOTE----- HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water. | 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. 300
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 10, 2014, as supplemented by letter dated March 23, 2015, 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

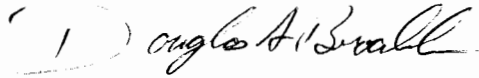
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Renewed Facility Operating License No. DPR-56 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 300, 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 by May 31, 2016.

FOR THE NUCLEAR REGULATORY COMMISSION



Douglas A. Broaddus, 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 30, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 300

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 marginal lines indicating the areas 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
3.4-18
3.4-20
3.5-4
3.5-10
3.5-13
3.6-28
3.6-30
3.6-30b
3.9-12
3.9-15

Insert
3.4-18
3.4-20
3.5-4
3.5-10
3.5-13
3.6-28
3.6-30
3.6-30b
3.9-12
3.9-15

- (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. 300, 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.

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.4.7.1 -----NOTE----- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. ----- Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.4.7.2 -----NOTE----- 1. Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. 2. HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--|
| B. No RHR shutdown cooling subsystem in operation. <u>AND</u> No recirculation pump in operation. | B.1 Verify reactor coolant circulating by an alternate method. <u>AND</u> B.2 Monitor reactor coolant temperature and pressure. | 1 hour from discovery of no reactor coolant circulation <u>AND</u> Once per 12 hours thereafter Once per hour |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.4.8.1 Verify one required RHR shutdown cooling subsystem or recirculation pump is operating. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.4.8.2 -----NOTE----- HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|--|
| SR 3.5.1.1 | Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.5.1.2 | -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.5.1.3 | Verify ADS nitrogen supply header pressure is ≥ 85 psig. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.5.1.4 | Verify the LPCI cross tie valve is closed and power is removed from the valve operator. | In accordance with the Surveillance Frequency Control Program. |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.5.2.2 Verify, for each required core spray (CS) subsystem, the:</p> <p>a. Suppression pool water level is ≥ 11.0 ft; or</p> <p>b. -----NOTE----- Only one required CS subsystem may take credit for this option during OPDRVs. ----- Condensate storage tank water level is ≥ 17.3 ft.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.2.3 Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.2.4 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |

(continued)

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.5.3.1 Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.3.2 -----NOTE----- Not required to be met for system vent flow paths opened under administrative control. ----- Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.3.3 -----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----- Verify, with reactor pressure ≤ 1053 psig and ≥ 940 psig, the RCIC pump can develop a flow rate ≥ 600 gpm against a system head corresponding to reactor pressure.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.5.3.4 -----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----- Verify, with reactor pressure ≤ 175 psig, the RCIC pump can develop a flow rate ≥ 600 gpm against a system head corresponding to reactor pressure.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|--|
| SR 3.6.2.3.1 | Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.3.2 | Verify each required RHR pump develops a flow rate $\geq 8,600$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode. | In accordance with the Inservice Testing Program |
| SR 3.6.2.3.3 | Verify manual transfer capability of power supply for the RHR motor-operated flow control valve and the RHR cross-tie motor-operated valve from the normal source to the alternate source. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.3.4 | <p>-----NOTE----- HPSW system related components are excluded. -----</p> <p>Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|--|
| SR 3.6.2.4.1 | Verify each RHR suppression pool spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.4.2 | Verify each suppression pool spray nozzle is unobstructed. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.4.3 | Verify manual transfer capability of power supply for the RHR motor-operated flow control valve and the RHR cross-tie motor-operated valve from the normal source to the alternate source. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.4.4 | <p>-----NOTE----- HPSW system related components are excluded. -----</p> <p>Verify RHR suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.6.2.5.1 Verify each RHR drywell spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.5.2 Verify each drywell spray nozzle is unobstructed. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.5.3 Verify manual transfer capability of power supply for the RHR motor-operated flow control valve and the RHR cross-tie motor-operated valve from the normal source to the alternate source. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.6.2.5.4 -----NOTE----- HPSW system related components are excluded. ----- Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.9.7.1 Verify one RHR shutdown cooling subsystem is operating. | In accordance with the Surveillance Frequency Control Program. |
| SR 3.9.7.2 -----NOTE----- HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water. | In accordance with the Surveillance Frequency Control Program. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.9.8.1 Verify one RHR shutdown cooling subsystem is operating.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |
| <p>SR 3.9.8.2 -----NOTE----- HPSW system related components are excluded. ----- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p> | <p>In accordance with the Surveillance Frequency Control Program.</p> |



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 297 AND 300

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 10, 2014, as supplemented by letter dated March 23, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML14191B190 and ML15082A255, respectively), Exelon Generation Company, LLC (Exelon, the licensee), requested changes to the Technical Specifications (TSs) for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. Specifically, the licensee requested to adopt U.S. Nuclear Regulatory Commission (NRC)-approved Technical Specifications Task Force (TSTF) Standard Technical Specifications (STS) Change Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," dated February 21, 2013 (ADAMS Accession No. ML13053A075). The availability of this TS improvement was announced in the *Federal Register* on January 15, 2014 (79 FR 2700), as part of the consolidated line item improvement process (CLIIP).

The proposed change would revise Surveillance Requirements (SRs) related to gas accumulation for the emergency core cooling system (ECCS) and reactor core isolation cooling (RCIC) system. The proposed change would also add new SRs related to gas accumulation for the residual heat removal (RHR), shutdown cooling, and drywell spray systems. The licensee stated that it has reviewed the NRC's model safety evaluation dated December 23, 2013 (ADAMS Accession No. ML13255A169), as well as the information provided in TSTF-523, Revision 2. The licensee stated that it had concluded that the justifications presented in the model safety evaluation and TSTF-523 are applicable to PBAPS, Units 2 and 3.

The supplement dated March 23, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 2, 2014 (79 FR 52063).

2.0 REGULATORY EVALUATION

2.1 Background

Gas accumulation in reactor systems can result in water hammer, pump cavitation, and pumping of non-condensable gas into the reactor vessel. These effects may result in the subject system being unable to perform its specified safety function. The NRC issued Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," in January 2008, to address the issue of gas accumulation in ECCS, decay heat removal (DHR) systems, and containment spray (CS) systems (ADAMS Accession No. ML072910759). The industry and NRC staff agreed that a change to the STS and plant-specific TS would be necessary to address some issues discussed in GL 2008-01. TSTF-523 contains changes to the TS SRs and TS Bases to address some of the concerns in GL 2008-01. The licensee proposed amending the PBAPS Units 2 and 3 TSs using a plant-specific adoption of the TSTF-523 changes.

2.2 Technical Specification Changes

Changes were proposed for SRs 3.5.1.1, 3.5.1.2, 3.5.2.3, 3.5.2.4, 3.5.3.1, and 3.5.3.2, as well as the addition of new SRs 3.4.7.2, 3.4.8.2, 3.6.2.3.3, 3.6.2.4.3, 3.6.2.5.3, 3.9.7.2, and 3.9.8.2 to TS 3.4.7, "RHR Shutdown Cooling System - Hot Shutdown," TS 3.4.8, "RHR Shutdown Cooling System - Cold Shutdown," TS 3.5.1, "ECCS - Operating," TS 3.5.2, "ECCS - Shutdown," TS 3.5.3, "RCIC System," TS 3.6.2.3, "RHR Suppression Pool Cooling," TS 3.6.2.4, "RHR Suppression Pool Spray," TS 3.6.2.5, "RHR Drywell Spray," TS 3.9.7, "RHR - High Water Level," and TS 3.9.8, "RHR - Low Water Level," respectively. Associated Bases changes were submitted for information only for the respective limiting conditions for operations (LCOs), SR changes, and SR additions.

A note which states "High Pressure Service Water (HPSW) system related components are excluded," was proposed for each of the SRs being added. This note was not included in TSTF-523 changes to the STS.

2.3 Regulatory Review

The regulations in Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 or similar plant-specific principal design criteria provide design requirements. Appendix B to 10 CFR Part 50, the TSs, and the licensee quality assurance programs provide operating requirements. The regulatory requirements of 10 CFR Part 50, Appendix A, that are applicable to gas management in the subject systems include: General Design Criteria (GDC) 1, 34, 35, 36, 37, 38, 39 and 40. GDC 1 requires that the subject systems be designed, fabricated, erected, and tested to quality standards. GDC 34 requires an RHR system be designed to maintain specified acceptable fuel design limits and to meet design conditions that are not exceeded if a single failure occurs and specified electrical power systems fail. GDC 35, 36, and 37 require an ECCS design that meets performance, inspection, and testing requirements. Additionally, the regulations in 10 CFR 50.46 provide specified ECCS performance criteria. GDC 38, 39, and 40 require a containment heat removal system design that meets performance, inspection, and testing requirements.

Quality assurance criteria provided in 10 CFR Part 50, Appendix B, that apply to gas management in the subject systems include: Criteria III, V, XI, XVI, and XVII. Criteria III and V require measures to ensure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2, "Definitions," and as specified in the license application, are correctly translated into controlled specifications, drawings, procedures, and instructions. Criterion XI requires a test program to ensure that the subject systems will perform satisfactorily in service and requires that test results shall be documented and evaluated to ensure that test requirements have been satisfied. Criterion XVI requires measures to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances, are promptly identified and corrected, and that significant conditions adverse to quality are documented and reported to management. Criterion XVII requires maintenance of records of activities affecting quality.

The NRC's regulatory requirements related to the content of the TSs are contained in 10 CFR 50.36(c). The regulations at 10 CFR 50.36 require that the TSs include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) LCOs; (3) SRs; (4) design features; and (5) administrative controls. 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. PBAPS Units 2 and 3 TS 5.4 requires that the licensee establish, implement, and maintain written procedures covering the applicable procedures recommended in Appendix A to Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operation)." Appendix A to RG 1.33 identifies instructions for filling and venting the ECCS and decay heat removal (DHR) system, as well as for draining and refilling heat exchangers. Standard TSs include SRs to verify that at least some of the subject systems piping is filled with water.

The NRC staff's model safety evaluation for TSTF-523 adoption was written for plants licensed to the GDC. PBAPS was not licensed to the 10 CFR Part 50, Appendix A, GDC. The PBAPS design criteria are discussed in the Updated Final Safety Analysis Report, Appendix H, "Conformance to AEC [Atomic Energy Commission] (NRC) Criteria." These differences do not alter the conclusion that the proposed change is applicable to PBAPS since the PBAPS design criteria provide similar design requirements as the GDC requirements applicable to gas accumulation.

The NRC's guidance for the format and content of licensee TSs can be found NUREG-1433, "Standard Technical Specifications General Electric Plants BWR/4."

Regulatory guidance for the NRC staff's review of containment heat removal systems, ECCS, and RHR systems is provided in the following revisions and sections of NUREG-0800, "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition:"

- Revision 5 of SRP, Section 6.2.2, "Containment Heat Removal Systems," dated March 2007 (ADAMS Accession No. ML070160661), provides the procedures concerning the review of

containment heat removal under post-accident conditions to help ensure compliance with GDC 38, 39, and 40.

- Revision 3 of SRP, Section 6.3, "Emergency Core Cooling System," dated March 2007 (ADAMS Accession No. ML070550068), provides the procedures concerning the review of ECCS to help ensure compliance with GDC 35, 36, and 37.
- Revision 5 of SRP, Section 5.4.7, "Residual Heat Removal (RHR) System," dated May 2010 (ADAMS Accession No. ML100680577), provides the procedures concerning the review of RHR system as it is used to cool the reactor coolant system during and following shutdown to help ensure compliance with GDC 34.

3.0 TECHNICAL EVALUATION

The NRC staff compared the licensee's proposed amendments against the applicable regulatory guidance in the STS, as modified by TSTF-523. The proposed amendments adopted the TS format and content, to the extent practicable, contained in the changes made to NUREG-1433, by TSTF-523. The NRC staff found that the proposed amendments are consistent with guidance in the STS, as modified by TSTF-523.

The NRC staff evaluated the proposed TS changes with respect to the regulatory requirements of 10 CFR 50.36(c). The licensee proposed the following TS changes:

- (1) Add SR 3.4.7.2, which states: "Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water." The SR would be performed at a frequency in accordance with the Surveillance Frequency Control Program. Two notes were proposed for the SR. The first note states: "Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure." The second note states: "HPSW system related components are excluded."
- (2) Add SR 3.4.8.2, which states: "Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water." The SR would be performed at a frequency in accordance with the Surveillance Frequency Control Program. A note was proposed for the SR which states: "HPSW system related components are excluded."
- (3) Revise the language for SR 3.5.1.1 from "Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve" to "Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water."
- (4) Add a note to SR 3.5.1.2, which states: "Not required to be met for system vent flow paths opened under administrative control."
- (5) Revise the language for SR 3.5.2.3 from "Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection

valve” to “Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.”

- (6) Add a note to SR 3.5.2.4, which states: “Not required to be met for system vent flow paths opened under administrative control.”
- (7) Revise the language for SR 3.5.3.1 from “Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve” to “Verify the RCIC system locations susceptible to gas accumulation are sufficiently filled with water.”
- (8) Add a note to SR 3.5.3.2, which states: “Not required to be met for system vent flow paths opened under administrative control.”
- (9) Add SR 3.6.2.3.4¹, which states: “Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.” The SR would be performed at a frequency in accordance with the Surveillance Frequency Control Program. A note was proposed for the SR which states: “HPSW system related components are excluded.”
- (10) Add SR 3.6.2.4.4¹, which states: “Verify RHR suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.” The SR would be performed at a frequency in accordance with the Surveillance Frequency Control Program. A note was proposed for the SR which states: “HPSW system related components are excluded.”
- (11) Add SR 3.6.2.5.4¹ which states: “Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.” The SR would be performed at a frequency in accordance with the Surveillance Frequency Control Program. A note was proposed for the SR which states: “HPSW system related components are excluded.”
- (12) Add SR 3.9.7.2, which states: “Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.” The SR would be performed at a frequency in accordance with the Surveillance Frequency Control Program. A note was proposed for the SR which states: “HPSW system related components are excluded.”
- (13) Add SR 3.9.8.2, which states: “Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.” The SR would be performed at a frequency in accordance with the Surveillance Frequency

¹ As discussed in Section 2.2 of this Safety Evaluation, the licensee proposed adding new SRs 3.6.2.3.3, 3.6.2.4.3, and 3.6.2.5.3 as part of this TSTF-523 amendment request. Subsequent to submittal of the TSTF-523 amendment request, the NRC staff issued Amendments 293 and 296 for PBAPS, Unit 2 and 3 (ADAMS Accession No. ML14133A046), which, in part, added new SRs numbered 3.6.2.3.3, 3.6.2.4.3, and 3.6.2.5.3. As such, the SRs being added by this amendment are numbered as SRs 3.6.2.3.4, 3.6.2.4.4, and 3.6.2.5.4, respectively.

Control Program. A note was proposed for the SR which states: "HPSW system related components are excluded."

The new language for the SRs was developed using licensee responses to GL 2008-01 and the NRC discussion contained in Task Interface Agreement (TIA) 2008-03, "Emergency Core Cooling System Voiding Relative To Compliance With Surveillance Requirements (SRs) 3.5.1.1, 3.5.2.3, and 3.5.3.1" (ADAMS Accession No. ML082560209). Many of the GL 2008-01 responses stated that licensees identified system locations susceptible to gas accumulation. In the TIA, the NRC stated that the intent of the TS SRs, which state "full of water," may be met if the licensee can establish, through an Operability Determination, that there is a reasonable expectation that the system in question will perform its specified safety function. Therefore, the phrase, "sufficiently filled with water" was recommended for the proposed TS changes. In the TS, "sufficiently filled with water" is understood to mean "sufficiently filled with water to support Operability." The regulation at 10 CFR 50.36(c)(3) states that one of the purposes of the SR is to verify that the LCO is met. Therefore, the NRC staff concludes that the new SR language, "Verify the [system name] locations susceptible to gas accumulation are sufficiently filled with water," is acceptable since this language will allow the licensee to make a conclusion as to whether or not a system is operable.

The language for the first note for SR 3.4.7.2 states that the SR does not have to be performed until 12 hours after reactor steam dome pressure is less than the RHR shutdown cooling isolation pressure. The NRC staff concludes that this note is acceptable because it provides a limited and reasonable time to perform the Surveillance after entering the Applicability of the LCO. In addition, the note is acceptable because, under the STS usage rules (STS Section 1.4), the requirement to manage gas accumulation is not affected by the allowance provided by the note. Licensees must have confidence that the SR can be met or the LCO must be declared not met.

A note is added to SRs that require verification that valves in the flow path are in the correct position. For system vent paths, the correct valve position is closed. The note allows the valves needed to be open for system venting to be opened under administrative control. Since administrative control provides reasonable assurance that the valves can be closed in a timely manner, as needed, the NRC staff concludes that the proposed note is acceptable.

The licensee proposed to add a note that excludes HPSW system related components from the scope of the SRs being added. The licensee stated that the design of the HPSW system and the operating experience for the system precluded it from the scope of the associated SRs. As discussed in the supplement dated March 23, 2015, the HPSW system provides cooling water to the RHR heat exchangers. The licensee stated that RHR heat exchanger performance was periodically verified with no abnormal performance observed indicative of air voiding during more than 40 years of operation. The HPSW System is an open-loop cooling water system and is not designed to be water solid. The majority of the HPSW piping is located below the ground elevation of the site. Based on the design and operating experience of the HPSW system, the NRC staff concludes that the proposed noted is acceptable.

The NRC staff found that the proposed SRs meet the regulatory requirements of 10 CFR 50.36(c) because they provide assurance that the necessary quality of systems and

components will be maintained and that the LCOs will be met. Therefore, the NRC staff finds the proposed amendments acceptable.

The licensee's application dated July 10, 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 will be made by the licensee in accordance with the TS Bases Control Program described in TS 5.5.10.

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 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 (79 FR 52063). 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.

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