

From: [Tobin, Jennifer](#)
To: [Helker, David P:\(GenCo-Nuc\)](#)
Cc: ["Gropp Jr, Richard W:\(GenCo-Nuc\)"](#)
Subject: Peach Bottom Units 2 and 3 - Request for Additional Information 2nd Round (FINAL) - Adopt 50.69 License Amendment (EPID L-2017-LLA-0281)
Date: Tuesday, July 17, 2018 5:18:00 PM
Attachments: [Peach Bottom 50-69 2nd Round RAIs.docx](#)

Dear Mr. Helker,

By letter dated August 30, 2017 (Accession No. ML17243A014), as supplemented by letter dated October 24, 2017 (ADAMS Accession No. ML17297B521), May 7, 2018 (ADAMS Accession No. ML18128A009), and June 6, 2018 (ADAMS Accession No. ML18157A260), Exelon Generation Company, LLC requested an amendment to the facility operating license for Peach Bottom Atomic Power Station Units 2 and 3 to adopt 10 CFR 50.69 for Risk-informed Categorization and Treatment of Structures, Systems and Components.

The Nuclear Regulatory Commission's (NRC) staff is reviewing your submittal and has determined that additional information is needed to complete its review. The specific request for additional information (RAI) questions are provided below. A clarification phone call held July 10, 2018, confirmed that the information below is still needed for NRC staff to review. A response to this 2nd round of RAIs is due no later than **August 10, 2018**.

If you have any questions, please contact me at (301) 415-2328. A copy of this e-mail will be made publicly available in ADAMS.

Thanks,
Jenny

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REQUEST FOR ADDITIONAL INFORMATION
APPLICATION TO ADOPT 10 CFR 50.69 RISK-INFORMED CATEGORIZATION OF
STRUCTURES, SYSTEMS, AND COMPONENTS
EXELON GENERATION COMPANY
PEACH BOTTOM ATOMIC POWER STATION (PBAPS), UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

Title 10, of the Code of Federal Regulations, Part 50, Section 69 (10 CFR 50.69), "Risk-Informed Categorization and Treatment of Structures, Systems, and Components for Nuclear Power Reactors", allows licensees to use a risk-informed process to categorize systems, structures, and components (SSCs) according to their safety significance in order to remove SSCs of low safety significance from the scope of certain identified special treatment requirements. Regulatory Guide (RG) 1.201, Revision 1, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to their Safety Significance" (Agencywide Documents Access and Management System

(ADAMS) Accession No. ML061090627) endorses, with regulatory positions and clarifications, the Nuclear Energy Institute (NEI) guidance document NEI 00 04, Revision 0 “10 CFR 50.69 SSC Categorization Guideline”, (ADAMS accession No. ML052910035) as one acceptable method for use in complying with the requirements in 10 CFR 50.69. Both RG 1.201 and NEI 00 04 cite RG 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” (ADAMS Accession No. ML040630078) which endorses industry consensus probabilistic risk assessment (PRA) standards, as the basis against which peer reviews evaluate the technical adequacy of a PRA. Revision 2 of RG 1.200 is available at ADAMS Accession No. ML090410014.

By letter dated August 30, 2017 (ADAMS Accession No. ML17243A014), as supplemented by letters dated October 24, 2017 (ADAMS Accession No. ML17297B521), May 7, 2018 (ADAMS Accession No. ML18128A009), and June 6, 2018 (ADAMS Accession No. ML18157A260), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) to adopt the regulation in 10 CFR 50.69 at the Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. Section 3.1.1 of the LAR states that Exelon will implement the risk categorization process of 10 CFR 50.69 in accordance with NEI 00 04, Revision 0, as endorsed by RG 1.201. However, the licensee’s LAR as supplemented does not contain enough information for the Nuclear Regulatory Commission (NRC) staff to determine if the licensee has implemented the guidance in NEI 00 04, as endorsed by RG 1.201, appropriately as a means to demonstrate compliance with all of the requirements in 10 CFR 50.69. The following requests for additional information (RAIs) outline the specific issues and information needed to complete the NRC staff’s review:

RAI 03.c.01 – Follow-up to Licensee Response to NRC RAI 03.c regarding Fire Modeling

The disposition to partially resolved Fact and Observation (F&O) 2012-1-40 states that detailed two-point fire modeling was not been performed for all risk significant scenarios but this treatment did not have a significant impact on the application. In RAI 03.c, the NRC staff requested that the licensee justify its statement that not fully resolving the F&O has a minimal impact on the application or to provide a mechanism that ensures that the two-point fire modeling is applied to risk significant fire scenarios prior to implementing the 10 CFR 50.69 categorization process. The response to RAI 03.c states that this finding will be resolved prior to implementing 10 CFR 50.69. The licensee stated that “risk significant fire PRA scenarios capable of being modeled using a two-point modeling approach will be updated using a two (or more) point fire modeling approach” prior to implementation of the 50.69 process.

- i. Explain what the phrase “capable of being modeled using a two-point modeling approach” means and what type of fire scenarios will not be modeled using this approach.
- ii. Justify how supporting requirement (SR) FSS-C1 will be met at Capability Category (CC) II after the update is performed.
- iii. If SR FSS-C1 will not be met at CC-II, justify why not using a two-point model for all risk significant scenarios has no impact on the application.

RAI 05.b.01 – Follow-up to Licensee Response to NRC RAI 05.b regarding Uncoordinated Breakers in the Fire PRA

The disposition to open F&O 2012-5-1 states that if the licensee identifies uncoordinated circuits, then the uncoordinated circuits will be modeled in the fire PRA. In RAI 05.b.ii, the NRC staff requested description of how modeling of uncoordinated circuits will be performed. The response to RAI 05.b proposed an implementation item stating that the uncoordinated circuits will be modelled or additional analysis will be performed to show that the circuits are coordinated. Confirm that any additional analysis performed to determine that circuits are coordinated will be performed in accordance with guidance in NUREG/CR-6850 on breaker coordination studies.

RAI 08.d.01 – Follow-up to Licensee Response to NRC RAI 08.d regarding the RCIC and HPCI Turbine Failure Probabilities

In RAI 08.d.ii the NRC staff requested the licensee to provide justification for the nominal failure probability assigned to the failure of the Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) turbines to run after passing liquid. The licensee's response to RAI 08.d states that failure of the HPCI and RCIC turbines to start were assigned a nominal value of 0.05 based on operator and system manager interviews, and based on engineering judgement. However, the licensee stated that the "HPCI and RCIC turbines are not specifically designed to continue running while passing liquid" and there was no industry failure data or valid testing under accident conditions cited in the RAI response. Provide the following:

- i. A sensitivity study or other quantitative justification which demonstrates that the 10 CFR 50.69 categorization results are not sensitive to the assumed 0.05 failure probability. NOTE: The industry PRA standard ASME/ANS RA-Sa-2009 states that a reasonable alternative assumption is one that has broad acceptance within the technical community and for which the technical basis for consideration is at least as sound as that of the assumption being made. NUREG- 1855, "Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making," Revision 1 (ML17062A466) states that for operating equipment reliability for which no specific calculations exist, an accepted conservative model assumption is to assign a failure probability of 1 for the equipment in question. Therefore, consistent with the above guidance, this sensitivity study should set the specific parameter of concern to a turbine failure probability to 1, or at a minimum, increase it by a factor of 10.
- ii. Alternatively, propose a mechanism that removes credit for the 0.05 failure to start probability for HPCI and RCIC turbines in the internal event and fire PRAs prior to implementation of the 10 CFR 50.69 risk informed categorization process.

RAI 10.b.01 – Follow-up to Licensee Response to NRC RAI 10.b regarding External Flood Hazard Screening

In RAI 10.b, the NRC staff requested the licensee to identify any structures, systems or components (SSCs), passive and/or active, which are credited in the screening of external flood hazards. The licensee's response to RAI 10.b states that a recently issued NRC staff assessment of the Peach Bottom external flooding evaluation in a letter dated November 6, 2017 (ADAMS Accession No. ML17292B763) indicates that there are no SSCs credited in the screening of external flooding. In addition, the response states that either available physical margin exists or, where water ingress is expected, all external flood mechanisms

resulted in water surface elevations below the design basis protection of the plant. However, the evaluation letter refers to “flood protection features” that are credited to reliably maintain key safety functions identified in Appendix B of NEI 16-05, Revision 1 (ADAMS Accession No. ML16165A178). These features seem to be passive features such as doors. Provide the following:

- i. Clarify whether the “flood protection features” are SSCs, passive or active, that are credited in the external flood hazard screening.
- ii. If the “flood protection features” are SSCs that are credited in the external flood hazard screening, then confirm that the guidance in NEI 00-04 Figure 5-6 will be followed for those SSCs (i.e. if the removal of the SSC would cause a screened scenario to become unscreened, then that SSC would be designated high-safety-significant).

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