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

May 22, 2012

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

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 - REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST FOR USE OF NEUTRON ABSORBING INSERTS IN SPENT FUEL POOL STORAGE RACKS (TAC NOS. ME7538 AND ME7539)

Dear Mr. Pacilio:

By letter to the Nuclear Regulatory Commission (NRC) dated November 3, 2011, as supplemented on December 22, 2011, and April 4, 2012, Exelon Generation Company, LLC (Exelon), submitted a license amendment request for Peach Bottom Atomic Power Station, Units 2 and 3. The proposed amendment would modify the Technical Specifications to include the use of neutron absorbing spent fuel pool rack inserts for the purpose of criticality control in the spent fuel pools.

The NRC staff is reviewing your submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). The RAI questions were provided in draft form to Mr. Thomas Loomis of your staff via e-mail on April 10, 2012. The draft questions were sent to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed.

A conference call between the NRC staff and the Exelon staff was held on April 23, 2012, to discuss the questions. During this call, it was agreed that several of the questions needed to be revised for clarification of the information to be submitted. The revised set of draft questions were sent to Mr. Loomis via e-mail on May 4, 2012. Following the call, Mr. Loomis stated that Exelon would provide a response to the RAI by June 29, 2012. Please note that if you do not respond to this letter by the agreed-upon date or provide an acceptable alternate date in writing, we may reject your application for amendment under the provisions of Title 10 of the *Code of Federal Regulations*, Section 2.108.

If you have any questions, please contact me at (301) 415-1420.

Sincerely,

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

Enclosure:
Request for Additional Information

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REQUEST FOR ADDITIONAL INFORMATION

REGARDING PROPOSED LICENSE AMENDMENT

USE OF NEUTRON ABSORBING SPENT FUEL POOL RACK INSERTS

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277 AND 50-278

By letter to the Nuclear Regulatory Commission (NRC) dated November 3, 2011, as supplemented on December 22, 2011, and April 4, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML113081441, ML113570208, and ML12096A052, respectively), Exelon Generation Company, LLC (Exelon, the licensee), submitted a license amendment request for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The proposed amendment would modify the Technical Specifications (TSs) to include the use of neutron absorbing spent fuel pool (SFP) rack inserts for the purpose of criticality control in the SFPs at PBAPS, Units 2 and 3.

The NRC staff is reviewing your submittal and has determined that additional information is needed to complete its review. The specific information requested is addressed below.

Criticality Analysis

RAI-19: Section 4.2, "Fuel Model Description" in Attachments 7 and 8 to the letter dated November 3, 2011, indicates that the lattice design and corresponding operating characteristics that produce the worst (i.e., highest) rack efficiency are selected as the design basis lattice. However, this does not appear to be the case as provided in Table 7 of Attachments 4 and 6. Explain how "rack efficiency" is used in your methodology to show that the regulatory requirements are met.

RAI-20: The results in Table 7 of Attachments 4 and 6 to the letter dated November 3, 2011, indicate that the highest in-core k-infinity case does not necessarily produce the limiting in-rack k-effective. Explain why in-core k-infinity remains the appropriate parameter to control in the TSs.

RAI-21: Regarding criticality code validation, the NRC's Interim Staff Guidance (ISG) DSS-ISG-2010-1, "Staff Guidance Regarding the Nuclear Criticality Analysis for Spent Fuel Pools" (ADAMS Accession No. ML110620086), states:

"An acceptable means of including isotopes that are not explicitly represented in the critical experiments used in the validation would be to increase the bias and bias uncertainty by an amount proportional to the reactivity worth of the isotopes not explicitly validated."

Justify the impact of actinides and fission products on the code validation bias.

RAI-22: Evaluate and apply any trends in the k-effective bias per ISG DSS-ISG-2010-1.

Enclosure

RAI-23: Section 3.2.3, "Gap Size and Panel Length Analyses," of Electronic Power Research Institute (EPRI) Topical Report (TR) 107335[1] reported a gap size of 3.4 inches for the II33 south panel in 1996. Attachment 1 to the letter dated November 3, 2011, states that, "[a]s an additional conservatism, and to bound future gap size growth, the gap size modeled in the analysis is 3.0 inches." Justify the assumed gap size.

RAI-24: Discuss whether the "Boraflex Panel Shrinkage and Edge Dissolution" bias accounts for reductions in both the length and the width of the Boraflex panel.

RAI-25: Considering the rack, the poison panel and the wrapper plate design at PBAPS, what is the limiting structural configuration of the Boraflex panels under the design basis seismic event from a criticality standpoint? Show that this condition is bounded by the criticality analysis.

BADGER and RACKLIFE

RAI-26: Quantify and justify the PBAPS-specific combined uncertainty in BADGER at a 95 percent probability, 95 percent confidence level.

RAI-27: Quantify and justify the PBAPS-specific combined uncertainty in RACKLIFE at a 95 percent probability, 95 percent confidence level.

RAI-28: Section 3.2.2 of Attachment 1 to the letter dated November 3, 2011, states that a "detailed calculation of the bias and bias uncertainty of the BADGER testing measurements and RACKLIFE analysis projections has been performed." Provide this calculation, including the input prediction and measurement data used in the calculation. Describe the normality of the data and any trending analysis performed.

RAI-29: Provide the RACKLIFE predicted panel average loss and dose values, and corresponding coordinates (i.e., location) for all panels in the PBAPS SFPs.

RAI-30: Provide the two-dimensional areal density measurements from all BADGER scans to evaluate the gradient within a given panel. Provide the corresponding count rates that were measured in these panels for each detector.

RAI-31: Provide a detailed description of the calibration process used at PBAPS to support the BADGER campaigns. Provide the calibration curves used to support the PBAPS BADGER campaigns. Describe how BADGER accounts for the effect of degradation levels on the calibration curves.

RAI-32: Provide a description, including a drawing, of the calibration cell used at PBAPS. Discuss the applicability of the calibration cell to the PBAPS BADGER campaigns from geometry and material composition considerations. Identify and evaluate their effects on uncertainties in determining the areal densities and the gap sizes.

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[1] EPRI TR-107335, "BADGER, a Probe for Nondestructive Testing of Residual Boron-10 Absorber Density in Spent-Fuel Storage Racks: Development and Demonstration," Dated October 1997

RAI-33: Describe how the calibration cell is stored and maintained between BADGER campaigns.

RAI-34: Provide the areal densities of the calibration panels in the calibration cell along with their uncertainties. Characterize the gaps in the calibration panels in terms of their sizes and distribution along the panel.

RAI-35: Provide the areal densities of the zero-dose panels that were used for each BADGER campaign. Evaluate the uncertainties associated with knowing the zero-dose areal densities. Provide the count rates that were measured in the zero-dose panels for each detector.

RAI-36: Describe the potential degradation mechanisms of the zero-dose panels due to heat and water chemistry and how they are accounted for.

RAI-37: Provide the panel data that was supplied to the RACKLIFE model that characterized the panels when they were first installed in the SFPs.

RAI-38: Discuss how the BADGER data is used to verify RACKLIFE. In addition, discuss how the BADGER measurement sample size is chosen and whether the sample size provides a statistically representative sample of the entire population of panels which bounds the worst-case degradation.

RAI-39: What version of RACKLIFE is currently being used at PBAPS? How does RACKLIFE account for the temperature variations along the length of the Boraflex panel?

RAI-40: In Section 3.8 of NET-332-01 (Attachment 2 to the letter dated April 4, 2012), it states that the "corrosion rates of coupons 23 and 24 were calculated based on ASTM-G34-72..." Please describe how this ASTM standard is applicable to the NETCO-SNAP-IN® Rack Inserts, since the rack inserts are made of AA1100 aluminum alloy. Also, please explain and justify how it was determined that exfoliation corrosion was the appropriate corrosion mechanism.

If you have any questions, please contact me at (301) 415-1420.

Sincerely,

/ra/

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

Docket Nos. 50-277 and 50-278

Enclosure:
Request for Additional Information

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