



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

July 1, 2010

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, UNIT 2 - REQUEST FOR  
ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT  
REQUEST FOR SAFETY LIMIT MINIMUM CRITICAL POWER RATIO CHANGE  
(TAC NO. ME3994)

Dear Mr. Pacilio:

By letter to the Nuclear Regulatory Commission (NRC) dated May 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101480555), Exelon Generation Company, LLC, (Exelon) submitted a License Amendment Request (LAR) for Peach Bottom Atomic Power Station (PBAPS), Unit 2. The submittal seeks to revise Technical Specification 2.1.1, "Reactor Core SLs [safety limits]" to reflect revised Safety Limit Minimum Critical Power Ratio (SLMCPR) values for operating cycle 19. The NRC staff has reviewed the request submitted by the licensee and determined that additional information is needed as set forth in the Enclosure.

The draft questions were sent to Mr. David Helker, of your staff, to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. On June 29, 2010, Mr. Helker indicated that the licensee will submit a response by July 16, 2010. 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.

M. Pacilio

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If you have any questions, please contact John Hughey at (301) 415-3204.

Sincerely,

A handwritten signature in black ink that reads "John D. Hughey". The signature is written in a cursive style with a long horizontal flourish extending to the right.

John D. Hughey, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-277

Enclosure: Request for Additional  
Information

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REQUEST FOR ADDITIONAL INFORMATION RELATED TO  
LICENSE AMENDMENT REQUEST FOR TECHNICAL SPECIFICATION CHANGES  
TO SAFETY LIMIT MINIMUM CRITICAL POWER RATIO VALUES  
PEACH BOTTOM ATOMIC POWER STATION – UNIT 2  
DOCKET NO. 50-277

By letter to the Nuclear Regulatory Commission (NRC) dated May 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101480555), Exelon Generation Company, LLC, (Exelon) submitted a License Amendment Request (LAR) for Peach Bottom Atomic Power Station (PBAPS), Unit 2. The submittal seeks to revise Technical Specification 2.1.1, "Reactor Core SLs [safety limits]" to reflect revised Safety Limit Minimum Critical Power Ratio (SLMCPR) values for operating cycle 19. The NRC staff has reviewed Exelon's submittal and determined that additional information, as described below, is needed to complete the review. (Note that the "Attachment 4" referenced in the following RAIs is the non-publicly available, proprietary version of Attachment 5 associated with ADAMs Accession No. ML101480555.)

- RAI-01: Provide the PBAPS Unit 2 cycle-specific fuel quantity for each fuel type and state when the specific fuel types are loaded in the core (i.e., fresh, once, or twice burn) as depicted in Figures 1 and 2 (the Cycle 19 and Cycle 18 reference core loading pattern, respectively) of Attachment 4.
- RAI-02: Provide the details to obtain a final core loading pattern as shown in Figure 1 of Attachment 4 including procedure, guideline, criteria, and approved methodologies used for this analysis.
- RAI-03: Confirm that the current cycle loading diagram shown in Figure 1 of Attachment 4 is used for calculating the PBAPS Unit 2 Cycle 19 SLMCPR values of 1.10 for two recirculation loop operation (TLO) and 1.14 for single recirculation loop operation.
- RAI-04: Confirm that PBAPS, Unit 2, is currently in the Cycle 18 operating cycle (referred to as the previous cycle in Attachment 4) and that Cycle 19 (referred to as the current cycle in Attachment 4) is the operating cycle that will commence following the upcoming Unit 2 refueling outage described in the amendment request.
- RAI-05: Provide the rationale for why the proposed SLMCPR increment of 0.03 for the proposed loading pattern in Figure 1 of Attachment 4 is on the high end of the normal approximate range of 0.01 to 0.03 for any expected core loading configurations.

Enclosure

Background for RAI-06.1 – RAI-06.3:

GNF2 fuel is a new fuel design with a 10x10 fuel rod assembly but with features that differ from the traditional 10x10 fuel design. The PBAPS, Unit 2 Cycle 19 core loading pattern includes GNF2 fuel assemblies, but there are no GNF2 data used in the approved methodologies listed in Section 1.0, "Methodology," of Attachment 4. As noted in Section 2.5, "Methodology Restrictions," of Attachment 4, the NRC safety evaluation for Topical Reports NEDC-32601P and NEDC-32694P and Amendment 25 to NEDE-24011-P-A (ADAMS Accession No. ML003740119) contains four restrictions that should be addressed in the LAR for the use of GNF2 fuel.

- RAI-06.1: Provide an evaluation with regard to the use of GNF2 fuel for the four restrictions referenced in Section 2.5 of Attachment 4.
- RAI-06.2: Provide a description that explains under what conditions the methodologies listed in Section 1.0 of Attachment 4 are applied to the PBAPS Unit 2 Cycle 19 application.
- RAI-06.3: Explain the difference between the critical power uncertainty values for GNF2 fuel and GE14 fuel as shown in Table 6 of Attachment 4.
- RAI-07: Provide an approximation of the correlation for the MCPR Importance Parameter (MIP) and the R-factor Importance Parameter (RIP), including applicable fuel related coefficients and constants, leading to the results of the TLO SLMCPR estimate using the MIPRIP Correlation shown in Table 3 of Attachment 4.
- RAI-08: Provide a justification that the approximation determined for RAI-07 is still applicable to GNF2 fuel since there are no GNF2 data points in Figure 5 of Attachment 4.

Background for RAI-09.1 – RAI-09.2:

Section 2.1, "Major Contributors to SLMCPR Change," states that Table 3 presents estimated impacts on the TLO SLMCPR due to methodology deviations, penalties, and/or uncertainties deviations from approved values.

- RAI-09.1: Provide calculation details and justify that the results listed in Table 3 are conservative related to methodology deviations, penalties, and/or uncertainties deviations from approved values.
- RAI-09.2: Provide a justification that all affected factors including any fuel related Part 21 issues are reflected in Table 3.

M. Pacilio

- 2 -

If you have any questions, please contact John Hughey at (301) 415-3204.

Sincerely,

*/ra/*

John D. Hughey, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-277

Enclosure: Request for Additional  
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ADAMS Accession No.: ML101790406

\*electronic concurrence

OFFICE	LPL1-2/PM	LPL1-2/LA	SRXB/BC	LPL1-2/BC
NAME	JHughey (w/comments)	ABaxter *	TUises	HChernoff (w/comments)
DATE	07/02/2010	06/30/2010	06/29/2010	07/01/2010

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