

August 22, 2012

MEMORANDUM TO: Meena K. Khanna, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3,
DRAFT REQUEST FOR ADDITIONAL INFORMATION (TAC NOS.
ME8535 AND ME8536)

The attached draft request for additional information (RAI) was transmitted on August 22, 2012, to Mr. Thomas Loomis of Exelon Generation Company, LLC (Exelon, the licensee). This information was transmitted to facilitate an upcoming conference call in order to clarify the licensee's amendment request for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, dated April 27, 2012. The proposed amendment would: (1) adopt a new methodology for preparation of the reactor coolant system pressure-temperature (P-T) limits; (2) relocate the P-T limits in the technical specifications (TSs) to a new licensee-controlled document, the Pressure and Temperature Limits Report (PTLR); and (3) modify the TSs to add references to the PTLR. PBAPS, Units 2 and 3, are currently licensed to P-T limits that are applicable up to 32 effective full power years (EFPY). The PTLR would include P-T limits applicable to both 32 EFPY and 54 EFPY.

The draft RAI was sent to Exelon to ensure that the questions are understandable, the regulatory basis for the questions is clear, and to determine if the information was previously docketed. This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's request.

Docket Nos. 50-277 and 50-278

Attachment: Draft RAI

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DRAFT REQUEST FOR ADDITIONAL INFORMATION
REGARDING PROPOSED LICENSE AMENDMENT
RELOCATION OF PRESSURE AND TEMPERATURE LIMIT CURVES
TO THE PRESSURE AND TEMPERATURE LIMITS REPORT
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 April 27, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML121230354), 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: (1) adopt a new methodology for preparation of the reactor coolant system pressure-temperature (P-T) limits; (2) relocate the P-T limits in the technical specifications (TSs) to a new licensee-controlled document, the Pressure and Temperature Limits Report (PTLR); and (3) modify the TSs to add references to the PTLR. PBAPS, Units 2 and 3, are currently licensed to P-T limits that are applicable up to 32 effective full power years (EFPY). The PTLR would include P-T limits applicable to both 32 EFPY and 54 EFPY.

The NRC staff has reviewed the information the licensee provided that supports the proposed amendment and would like to discuss the following issues to clarify the submittal.

1. Section 1.0 of Attachment 1 to the licensee's application dated April 27, 2012, states that relocation of the P-T limit curves to the PTLR is consistent with the guidance provided in NRC-approved GE Hitachi Nuclear Energy Licensing Topical Report NEDC-33178P-A, Revision 1 (ADAMS Accession No. ML092370486). Equations 4-2 and 4-3 in Section 4.3.2.1.1 of NEDC-33178P-A are used to determine if the generic Pressure Test - Non-Beltline, Curve A is applicable. The equations are as follows:

$$R / t^{1/2} = 138 / 8^{1/2} = 49 \text{ inch}^{1/2} \qquad \text{Equation 4-2}$$

$$R / t^{1/2} \qquad \text{Equation 4-3}$$

As discussed in Section 4.3.2.1.1 of NEDC-33178P-A, if the plant-specific result of Equation 4-3 is greater than that of the generic value from Equation 4-2, the user is directed to perform a plant-specific evaluation. The NRC staff conducted the comparison and found that the PBAPS-provided geometry information results in a value greater than the generic value. Justify the use of the Section 4.3.2.1.1 curve or submit a plant-specific evaluation.

2. 10 CFR Part 50, Appendix G, Paragraph IV.A states that, "the pressure-retaining components of the reactor coolant pressure boundary [RCPB] that are made of ferritic materials must meet the requirements of the [American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code], supplemented by the additional requirements

set forth below.” These requirements include paragraph IV.A.2, “Pressure-Temperature Limits and Minimum Temperature Requirements”. Therefore, 10 CFR Part 50, Appendix G requires that P-T limits be developed for the ferritic materials in the reactor vessel (RV) beltline (neutron fluence $\geq 1 \times 10^{17}$ n/cm², E > 1 MeV), as well as ferritic materials not in the RV beltline (neutron fluence $< 1 \times 10^{17}$ n/cm², E > 1 MeV). Further, 10 CFR Part 50, Appendix G requires that all RCPB components must meet the ASME Code, Section III requirements. The relevant ASME Code, Section III requirement that will affect the P-T limits is the lowest service temperature requirement for all RCPB components specified in Section III, NB-2332(b).

The P-T limit calculations for ferritic RCPB components that are not RV beltline shell materials may define P-T curves that are more limiting than those calculated for the RV beltline shell materials due to the following factors:

- a) RV nozzles, penetrations, and other discontinuities have complex geometries that may exhibit significantly higher stresses than those for the RV beltline shell region. These higher stresses can potentially result in more restrictive P-T limits, even if the reference temperature (RT_{NDT}) for these components is not as high as that of RV beltline shell materials that have simpler geometries.
- b) Ferritic RCPB components that are not part of the RV may have initial RT_{NDT} values, which may define a more restrictive lowest operating temperature in the P-T limits than those for the RV beltline shell materials.

Consequently, please describe how the P-T limit curves submitted for PBAPS, Units 2 and 3 and the methodology used to develop these curves, considered all RV materials (beltline and non-beltline) and the lowest service temperature of all ferritic RCPB materials, consistent with the requirements of 10 CFR Part 50, Appendix G.