

DRAFT REQUEST FOR ADDITIONAL INFORMATION REGARDING

RELIEF REQUEST I4R-51 CONCERNING ALTERNATIVES TO

REACTOR VESSEL WELD EXAMINATIONS

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 January 24, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML110250132 and ML110700146), Exelon Generation Company, LLC, (Exelon) submitted Relief Request I4R-51 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The relief request would provide relief from reactor vessel circumferential weld examinations as currently required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Table IWB-2500-1 through the end of the extended license period for PBAPS, Units 2 and 3. The NRC staff has reviewed Exelon's submittal and determined that additional information, as described below, is needed to complete the review.

The licensee submitted information from Section 4.2.3 of the Safety Evaluation Report related to the License Renewal Application (LRA) for PBAPS, Units 2 and 3, NUREG-1769, dated March, 2003 (ADAMS Accession No. ML031010127), as its technical basis for relief from inspection of the reactor pressure vessel circumferential welds. In the LRA and NUREG-1769, relief from the circumferential weld examination was evaluated as a time limited aging analysis (TLAA).

The licensee's evaluation was based on demonstrating that (1) at the end of the period of extended operation (PEO), the circumferential welds will continue to satisfy the limiting conditional failure probability for circumferential welds in the NRC staff's July 28, 1998, safety evaluation (SE) regarding "BWR [Boiling Water Reactor] Vessel and Internals Project, BWR Reactor Pressure Vessel Shell Weld Inspection Recommendations (BWRVIP-05)," (ADAMS Legacy No. 9808040041) and (2) operator training and established procedures that limit the frequency of cold over-pressure events to the amount specified in the NRC staff's July 28, 1998, SE, have been implemented at PBAPS Units 2 and 3. The applicable limiting conditional failure probability from the NRC staff's SE for BWRVIP-05 is linked to the bounding mean reference temperature (RT_{NDT}) value for vessels manufactured by Chicago Bridge & Iron (CB&I) of 70.6 °F. The NRC staff's evaluation of the TLAA documented in Section 4.2.3 of NUREG-1769 provided mean RT_{NDT} values for the PBAPS, Units 2 and 3, limiting circumferential welds of 12 °F and 17 °F. The mean RT_{NDT} values are based on the following copper (Cu) content, nickel (Ni) content, and 64 effective full power year (EFPY) neutron fluence values: for PBAPS Unit 2, 0.056 weight percent Cu, 0.96 weight percent Ni, and 1.8×10^{18} neutrons per squared-centimeter (n/cm^2); for PBAPS, Unit 3, 0.102 weight percent Cu, 0.942 weight percent Ni, 1.4×10^{18} n/cm^2 (energy greater than 1.0 million electron-volts).

However, it has been seven years since the NRC staff's SE for BWRVIP-05 was issued. Best estimate chemistry values can change due to additional surveillance data. Projected fluence values may change due to power uprates, changes in core design, or refined analytical methods. Therefore, the NRC staff requests the following information:

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- RAI-01: Confirm that there have been no changes to the input values to the evaluation of the RT_{NDT} for PBAPS, Units 2 or 3 at 64 EFPY presented in NRC staff's SE for BWRVIP-05, including the projected 64 EFPY neutron fluence, copper content, or nickel content of the circumferential weld materials.
- RAI-02: If there have been changes to any of the input values, provide the revised input values and describe the basis for the change.