



RS-18-099

September 28, 2018

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: NEI 12-06, Appendix H, Revision 4, H.4.5 Path 5: GMRS > 2 × SSE, Mitigating Strategies Assessment (MSA) Report for the New Seismic Hazard Information

References:

1. NEI 12-06, Revision 4, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, December 2016 (ML16354B421)
2. JLD-ISG-2012-01, Revision 2, Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events, February 2017 (ML17005A188)
3. Exelon Generation Company, LLC Letter to USNRC, Seismic Hazard and Screening Report (Central and Eastern United States (CEUS) Sites), Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 31, 2014 (RS-14-071) (ML14090A247)
4. NRC Letter to Exelon Generation Company, LLC, Peach Bottom Atomic Power Station, Units 2 and 3, Staff Assessment of Information Provided Pursuant to Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated April 20, 2015 (ML15051A262)
5. Exelon Generation Company, LLC letter to USNRC, Seismic Probabilistic Risk Assessment Report, Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated August 28, 2018 (RS-18-098) (ML18240A065)
6. EPRI, "Seismic Evaluation Guidance: Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic", Report Number 1025287, Palo Alto, CA, November, 2012

7. Exelon Generation Company, LLC letter to USNRC, Spent Fuel Pool Evaluation Supplemental Report, Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated December 15, 2017 (RS-17-149) (ML17349A096)
8. Exelon Generation Company, LLC letter to USNRC, Report of Full Compliance with March 12, 2012 Commission Order Modifying Licenses with Regard for Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated January 5, 2018 (RS-18-002) (ML18005A701)

The purpose of this letter is to provide the results of the assessment for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, to demonstrate that Seismic Probabilistic Risk Assessment (SPRA) based alternate mitigating strategy (AMS) can be implemented considering the impacts of the reevaluated seismic hazard. These AMSs are consistent with the FLEX strategies described in the Final Integrated Plan [Reference 8]. The assessment was performed in accordance with the guidance provided in Appendix H of NEI 12-06 Revision 4 [Reference 1] which was endorsed by the NRC [Reference 2].

The Mitigating Strategies Seismic Hazard Information (MSSHI) is the licensee's reevaluated seismic hazard information at PBAPS, developed using Probabilistic Seismic Hazard Analysis (PSHA) [Reference 5]. In response to the NRC's Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012, PBAPS submitted the reevaluated seismic hazard information including the Uniform Hazard Response Spectra (UHRS), Ground Motion Response Spectrum (GMRS) and the hazard curves to the NRC on March 31, 2014 [Reference 3]. The NRC staff concluded that the MSSHI that was submitted adequately characterizes the reevaluated seismic hazard for the site [Reference 4].

The PBAPS SPRA report was submitted to the NRC on August 28, 2018 [Reference 5]. The PBAPS GMRS used in this MSA report is the GMRS developed for the PBAPS SPRA. The SPRA GMRS was developed using the same PSHA approach used by EPRI to develop the GMRS that was submitted to the NRC [Reference 3]. Additional updated source information and site-specific parameters were used in its development. Note that the GMRS developed by EPRI and submitted to the NRC only provided response spectra in the horizontal direction. For the SPRA, a vertical GMRS was also developed. The GMRS developed for the SPRA was reviewed as part of the full scope peer review performed for the SPRA [Reference 5]. The peak ground acceleration and the peak horizontal spectral acceleration from the GMRS developed for the SPRA are 0.31g and 0.62g, respectively [Reference 5].

Based upon the mitigating strategies assessment presented in the enclosure to this letter, the mitigating strategies for PBAPS can be implemented as designed considering the impacts of the reevaluated seismic hazard.

This letter contains no new regulatory commitments and no revision to existing regulatory commitments.

Should you have any questions regarding this submittal, please contact David J. Distel at 610-765-5517.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of September 2018.

Respectfully submitted,



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Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Enclosure: Seismic Mitigating Strategies Assessment for Peach Bottom Atomic Power Station,
Units 2 and 3

cc: Regional Administrator - NRC Region I
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ENCLOSURE

Exelon Generation
Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Seismic Mitigating Strategies Assessment for
Peach Bottom Atomic Station, Units 2 and 3

(2 Pages)

Mitigating Strategies Assessment

The purpose of this Mitigating Strategies Assessment (MSA) is to evaluate and demonstrate that Peach Bottom Atomic Station (PBAPS), Units 2 and 3, can mitigate the effects of the reevaluated seismic hazard information developed pursuant to the NRC's 10 CFR 50.54(f) letter dated March 12, 2012. The assessment was performed in accordance with the guidance provided in NEI 12-06 [Reference 1]. Reference 1 discusses a method to develop an alternate mitigating strategy (AMS) to address the mitigating strategies seismic hazard information (MSSHI). JLD-ISG-2012-01 [Reference 2] provides an NRC staff position that the method described in Section H.4.5 of Reference 1 for an AMS is acceptable for mitigating a beyond-design-basis external event.

The risk-informed assessment described in H.4.5.3 of Reference 1 uses the SPRA to address the impacts of the MSSHI on the plant. Consistent with Section H.4.5.3 of Reference 1, the PBAPS base SPRA [Reference 5] has been submitted to the NRC for review and has been peer reviewed in accordance with the expectations set forth in Reference 6.

The results of the SPRA for PBAPS Unit 2 are: 2.1×10^{-5} /year seismic core damage frequency (SCDF) and 4.0×10^{-6} /year seismic large early release frequency (SLERF). The results of the SPRA for PBAPS Unit 3 are: 2.1×10^{-5} /year SCDF and 4.1×10^{-6} /year SLERF. These results are less than 5×10^{-5} /year SCDF and 5×10^{-6} /year SLERF. Therefore, in accordance with Section H.4.5.3 of Reference 1, the base SPRA results demonstrate that the mitigating strategies are reasonably protected for the MSSHI and an evaluation under Sections H.4.5.2, H.4.5.4, or H.4.5.5 of Reference 1 is not required.

Spent Fuel Pool Cooling Evaluation

The evaluation of spent fuel pool (SFP) cooling for PBAPS was performed based on the initial conditions established in NEI 12-06 [Reference 1] for SFP cooling coping in the event of an Extended Loss of A/C Power (ELAP)/Loss of normal access to the Ultimate Heat Sink (LUHS). The evaluation also used the results of pool heat up analyses from the ELAP evaluation as input.

The FLEX strategy for SFP cooling utilizes SFP level monitoring and make-up capability as described in the PBAPS Final Integrated Plan (FIP) [Reference 8]. SFP make-up capability is provided using the portable FLEX pump taking suction through a portable flexible hose and discharging through a permanently installed FLEX makeup connection tie-in to the RHR loop. SFP make-up is accomplished either through the permanently installed RHR loop piping or through flexible hoses routed from a permanent FLEX tie-in connection off the RHR loop at EL. 165' to the SFP. Although not required by NEI 12-06 Revision 4 [Reference 1] based on results of the SFP Integrity Evaluation [Reference 7], SFP spray can be accomplished with the flexible hose option. In addition, there is an option to run a flexible hose directly to the SFP from the discharge of the FLEX pump in the yard area. The source of make-up water is the plant Emergency Cooling Tower (ECT). These strategies are consistent with the FLEX strategies described in the FIP [Reference 8].

The permanently installed plant equipment relied on for the implementation of the SFP Cooling FLEX strategy has been designed and installed, or evaluated to remain functional, in accordance with the plant design basis to the SSE loading conditions. The spent fuel pool integrity evaluation demonstrated inherent margins of the spent fuel pool structure above the SSE to the GMRS level [References 1 & 7]. The portable FLEX equipment availability, including its storage and deployment pathways, and the permanently installed

plant equipment needed to accomplish SFP cooling, including the SFP level instrumentation and the SFP level indication have subsequently been evaluated considering the GMRS-consistent loading conditions. Since the plant's FLEX strategy for SFP cooling includes an option to run a flexible hose directly from the discharge of the portable pump to the pool, no additional evaluation of the permanently installed FLEX makeup connection and the SFP emergency make-up piping is required. A plant walkdown has been performed to identify any adverse seismic interactions that may prevent the implementation of SFP makeup operation. In addition, an evaluation of the Spent Fuel Pool instrumentation and supports has been performed to ensure that they have at least a C_{10%} capacity equal to the GMRS. No adverse conditions were identified that would prevent implementation of the FLEX strategy following a seismic event equal to the GMRS and all components were found to have a C_{10%} capacity at least equal to the GMRS. Other equipment needed to implement the FLEX SFP Cooling strategy such as the FLEX Storage Building, equipment stored in the FLEX Storage Building and the Emergency Cooling Tower are all included in the Seismic PRA model and HCLPF values calculated for these items all exceed the GMRS.

Summary of Modifications

There are no plant modifications required as a result of this MSA.