Exelon Generation

10 CFR 50.54(f)

RS-18-033

March 15, 2018

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

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: Request for Extension of Due Date for Seismic Probabilistic Risk Assessment Submittal

References:

1. NRC Letter, 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 (ML12053A340)
2. 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)
3. Exelon Generation Company, LLC Letter to NRC, Peach Bottom Atomic Power Station, Units 2 and 3 - 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 (ML17349A096)
4. Exelon Generation Company, LLC Letter to NRC, Peach Bottom Atomic Power Station, Units 2 and 3 - Expedited Seismic Evaluation Process Report (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 December 19, 2014 (ML14353A333)
5. NRC Letter, Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendation 2.1 "Seismic" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated October 27, 2015, (ML15194A015)

Exelon Generation Company, LLC (EGC) requests an extension of March 31, 2018 due date for submittal of a Seismic Probabilistic Risk Assessment (SPRA) for the Peach Bottom Atomic Power Station, Units 2 and 3. EGC is requesting that the due date be extended to September 28, 2018.

By Reference 1, the Nuclear Regulatory Commission (NRC) requested licensees reevaluate the seismic hazard at their sites using present-day NRC requirements and guidance. As documented in Reference 2, the reevaluated seismic hazard for Peach Bottom Atomic Power Station, Units 2 and 3 exceeds the plant design basis seismic hazard. Consequently, a seismic risk evaluation, including a Spent Fuel Pool Evaluation are required for compliance with Reference 1. References 3 and 4 provided the Peach Bottom Atomic Power Station, Units 2 and 3 Spent Fuel Pool Evaluation and the Expedited Seismic Evaluation Process Report, respectively. By Reference 5, the NRC established a due date of March 31, 2018 for submittal of an SPRA for Peach Bottom Atomic Power Station, Units 2 and 3.

The SPRA for Peach Bottom Atomic Power Station, Units 2 and 3 commenced in March 2015. After completion of the evaluation, the Peer Review was performed in March 2017. During preparation and review of the SPRA final documentation supporting the SPRA submittal, it was discovered that a Peer Review finding had not been adequately addressed. The Peer Review finding is associated with documentation of the source and justification for relay seismic capacities used in the PRA model. After further evaluation, it was determined that the justification for the relay capacities used in the base case SPRA model was insufficient and incorrect. As a result, EGC has initiated an effort to calculate updated relay chatter fragility data using more appropriate relay chatter capacities, re-baseline the SPRA model, and re-quantify the updated base case model with the revised relay chatter fragility data and fragility groups. This effort will necessitate updating sensitivity studies and parametric uncertainty analyses as well. Completion of this additional work will ensure adequate resolution of the Peer Review findings and observations.

EGC has developed a detailed schedule for the associated activities which indicates that the final Peach Bottom Atomic Power Station, Units 2 and 3 SPRA can be submitted to the NRC by September 28, 2018. EGC is therefore requesting that the SPRA submittal due date be extended to that date.

As detailed in the enclosure to this letter, EGC considers that continued plant operation during the extension period is justified based on considerations that include: consistency with the NRC overall schedule for submittal of all Near-Term Task Force related plant SPRAs, the defense-in-depth provided by compliance with all NRC Orders regarding beyond-design-basis events, completion of the NRC endorsed Expedited Seismic Evaluation Process and all actions identified by that process, the inherent nuclear power plant design margins as described in an NRC recognized Electric Power Research Institute report, the comparable ratio of reevaluated hazard to design hazard for Peach Bottom Atomic Power Station, Units 2 and 3 and other SPRA plants, and the completion of the evaluation demonstrating the beyond-design-basis seismic robustness of the Peach Bottom Atomic Power Station, Units 2 and 3 Spent Fuel Pool.

The enclosure to this letter provides the detailed extension request including background information and justification for the extension.

This letter contains no new regulatory commitments or revisions to existing regulatory commitments.

If you have any questions regarding this report, 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 15th day of March 2018.

Respectfully submitted,

D. P. Helker

David P. Helker
Manager - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Enclosure: Request for Extension of Seismic Probabilistic Risk Assessment Submittal Date

cc: Regional Administrator - NRC Region I
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Project Manager, NRR – Peach Bottom Atomic Power Station
Mr. Eric E. Bowman, NRR/JLD/JHMB, NRC
Mr. Brett A. Titus, NRR/JLD/JCBB, NRC
Mr. Stephen M. Wyman, NRR/JLD/JHMB, NRC
Director, Bureau of Radiation Protection – Pennsylvania Department of Environmental Resources
S. T. Gray, State of Maryland
R. R. Janati, Chief, Division of Nuclear Safety, Pennsylvania Department of Environmental Protection, Bureau of Radiation Protection

ENCLOSURE

Request for Extension of Seismic Probabilistic Risk Assessment Submittal Date

(4 Pages)

Request for Extension of Seismic Probabilistic Risk Assessment Submittal Date

This enclosure provides the details of Exelon Generation Company, LLC's (EGCs) request for an extension of the March 31, 2018, due date for submittal of a Peach Bottom Atomic Power Station, Units 2 and 3 Seismic Probabilistic Risk Assessment (SPRA). EGC is requesting that the due date be extended to September 28, 2018.

Background

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Reference A which requested, pursuant to 10 CFR 50.54(f), that licensees reevaluate the seismic hazard at their sites using present-day NRC requirements and guidance. The Peach Bottom Atomic Power Station, Units 2 and 3 seismic hazard reevaluation was documented in Reference B. As indicated in Reference B, the reevaluated seismic hazard for Peach Bottom Atomic Power Station, Units 2 and 3 exceeds the plant design basis seismic hazard. Therefore, a seismic risk evaluation, and Spent Fuel Pool (SFP) evaluation are required for compliance with Reference A.

Reference C documented the NRC Staff's review of the Peach Bottom Atomic Power Station, Units 2 and 3 reevaluation, and documented the Staff's conclusion that the reevaluated seismic hazard was suitable for other actions associated with Reference A. As documented in Reference D, the NRC established a due date of March 31, 2018, for EGC submittal of an SPRA.

EGC established a project schedule for preparation, internal review, peer review, resolution of findings and observations (F&Os), and submittal of an SPRA for Peach Bottom Atomic Power Station, Units 2 and 3 by the March 31, 2018, date specified by Reference D. The SPRA for Peach Bottom Atomic Power Station, Units 2 and 3 commenced in March 2015. After completion of the evaluation, the Peer Review was performed in March 2017. During preparation and review of the SPRA final documentation supporting the SPRA submittal, it was discovered that a Peer Review finding had not been adequately addressed. The Peer Review finding is associated with documentation of the source and justification for relay seismic capacities used in the PRA model. After further evaluation, it was determined that the justification for the relay capacities used in the base case SPRA model was insufficient and incorrect. As a result, EGC has initiated an effort to calculate updated relay chatter fragility data using more appropriate relay chatter capacities, re-baseline the SPRA model, and re-quantify the updated base case model with the revised relay chatter fragility data and fragility groups. This effort will necessitate updating sensitivity studies and parametric uncertainty analyses as well. Completion of this additional work will ensure adequate resolution of the Peer Review findings and observations.

Requested Extension

EGC requests that the due date for submittal of the Peach Bottom Atomic Power Station, Units 2 and 3 SPRA be extended to September 28, 2018. This date is based on a detailed schedule for the critical path activities necessary for that submittal.

Plant Operation During the Requested Extension Period

EGC considers the requested extension to be justified with respect to continued plant operation

during the extension period based on the following considerations.

The requested due date is within the bounds of the NRC schedule for industry submittal of seismic-related 10 CFR 50.54(f) information. As documented in Reference D, licensees were requested to perform site specific evaluations based on a number of criteria associated with the magnitude of their reevaluated seismic hazard and how it compared to their design basis seismic hazard. SPRAs were required for a subset of plants, including Peach Bottom Atomic Power Station, Units 2 and 3. Within this subset, there is a range of dates by which licensees are to submit their SPRA evaluations. The range of dates begins in March 2017 and continues through December 2019. The order of licensee submittals within this range of dates was not based on safety or seismic risk concerns (i.e., within this submittal date range, plants are not sequenced in order of increasing or decreasing seismic risk). The requested extension will move the Peach Bottom Atomic Power Station, Units 2 and 3 SPRA submittal within the existing date range, and not beyond the last date in the range. Therefore, the NRC Staff's basis (stated in Reference E) for continued safe operation during the period in which such evaluations are being performed remains applicable.

Through compliance with Orders EA-12-049 and EA-12-051 (References F and G), Peach Bottom Atomic Power Station, Units 2 and 3 has achieved additional defense-in-depth for coping with an extended loss of alternating current electrical power (ELAP) and loss of normal access to the ultimate heat sink (LUHS) due to external events, including those caused by seismic events. The NRC Staff has completed their audit review (Reference H) regarding implementation of the mitigating strategies and reliable SFP instrumentation required by these orders. All NRC open and confirmatory items have been closed as documented in Reference I. In conjunction with the completion of Expedited Seismic Evaluation Process (ESEP) related activities as discussed below, Peach Bottom Atomic Power Station, Units 2 and 3 compliance with Orders EA-12-049 and EA-12-051 results in a safety benefit and an enhanced ability to mitigate beyond-design-basis events at Peach Bottom Atomic Power Station, Units 2 and 3 during the requested extension period.

As required by Reference A, EGC performed an interim evaluation and took appropriate actions to address the higher seismic hazard (relative to the design basis) prior to completion of the SPRA. EGC implemented the NRC endorsed ESEP to demonstrate adequate seismic margin through a review of plant equipment relied upon to protect reactor core cooling and containment integrity functions following beyond-design-basis seismic events. All actions necessary to meet the ESEP beyond-design-basis seismic criterion for the credited plant equipment have been completed. This provides assurance of core protection and containment integrity following an ESEP beyond-design-basis seismic event concurrent with an ELAP and LUHS. The NRC Staff review (Reference J) of the Peach Bottom Atomic Power Station, Units 2 and 3 ESEP concluded that the assessment provided assurance that supported continued plant safety while the longer-term seismic evaluation is completed.

Peach Bottom Atomic Power Station, Units 2 and 3 and other plants required to perform an SPRA were included in the database of an Electric Power Research Institute (EPRI) report regarding the inherent nuclear power plant seismic design margins. The EPRI report was transmitted to the NRC by a Nuclear Energy Institute (NEI) letter, Reference K. The NEI letter and EPRI report were referenced by the NRC letter (Reference E) documenting reasons for continued operation of nuclear plants while seismic reevaluations are in progress. In the Peach Bottom Atomic Power Station, Units 2 and 3 ESEP report, EGC confirmed that the reasons for continued operation cited in the EPRI report and Reference E applied to Peach Bottom Atomic Power Station, Units 2 and 3. These reasons include safety margins in the plant's seismic

design such that the plants can withstand potential earthquakes exceeding the original design basis. As documented in Reference E, the NRC staff confirmed that the conclusions reached in the EPRI study report remain valid and that plants can continue to operate while additional evaluations are conducted.

Additionally, a beyond-design-basis SFP seismic integrity evaluation (Reference L) has confirmed that the pool is seismically adequate and can retain the necessary water inventory in accordance with the Reference A seismic evaluation criteria. The SFP seismic evaluation was based on the GMRS peak spectral acceleration documented in Reference B. The Peach Bottom Atomic Power Station, Units 2 and 3 SFP seismic evaluation confirms that the SFP is seismically adequate in accordance with NTTF 2.1 seismic evaluation criteria. The SFP evaluation provides assurance that the spent fuel will be adequately protected from the reevaluated seismic hazards during the requested extension period.

Finally, a Seismic Mitigating Strategies Assessment (SMSA) has been conducted in parallel, and will be submitted concurrently, with the SPRA. The SMSA uses the methodology described in Appendix H of NRC-endorsed NEI 12-06 (Reference M) and dependent on SPRA results for evaluation methodology.

Conclusion

EGC has performed all previous Near-Term Task Force related actions for Peach Bottom Atomic Power Station, Units 2 and 3 in accordance with NRC established schedules. EGC's request for an extension of the SPRA submittal due date is needed to assure adequate time for finalization of the SPRA. Previous EGC and industry actions taken in response to the Near-Term Task Force requirements provide assurance of safety with respect to beyond-design-basis seismic hazards during the extension period. Submittal and NRC acceptance of the SPRA are the final activities needed for closure of the 10 CFR 50.54(f) request with respect to seismic hazards for Peach Bottom Atomic Power Station, Units 2 and 3.

References

A. NRC Letter, 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 (ML12053A340)

B. Exelon Generation Company, LLC, 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 (RS-14-071), dated March 31, 2014 (ML14090A247)

C. 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)

D. NRC Letter, Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendation 2.1 "Seismic" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated October 27, 2015, (ML15194A015)

E. Letter from E. J. Leeds, NRC, to all listed power reactor licensees and holders of construction permits in active or deferred status, "Screening and Prioritization Results Regarding Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Seismic Hazard Re-Evaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated May 9, 2014, (ML14111A147)

F. Letter from E. J. Leeds and M. R. Johnson, NRC, to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012, (ML12054A736)

G. Letter from E. J. Leeds and M. R. Johnson, NRC, to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012, (ML12054A682)

H. NRC Letter to Exelon Generation Company, LLC, Peach Bottom Atomic Power Station, Units 2 and 3 – Report for the Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation related to Orders EA-12-049 and EA-12-051, dated September 23, 2015

I. Exelon Generation Company, LLC Letter to NRC, Peach Bottom Atomic Power Station, Units 2 and 3 – Report of Full Compliance with March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated January 5, 2018 (ML18005A701)

J. NRC Letter to Exelon Generation Company, LLC, Peach Bottom Atomic Power Station, Units 2 and 3 - Staff Review of Interim Evaluation Associated with Reevaluated Seismic Hazard Implementing Near-Term Task Force Recommendation 2.1," dated June 30, 2015

K. Letter from A R. Pietrangelo, NEI, to E. J. Leeds, NRC, "Seismic Risk Evaluations for Plants in the Central and Eastern United States," dated March 12, 2014, (ML 14083A596)

L. Exelon Generation Company, LLC Letter to NRC, Peach Bottom Atomic Power Station, Units 2 and 3 - 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, 2015 (ML17349A096)

M. NEI Report NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012