

RS-18-053

10 CFR 50.54(f)

May 14, 2018

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

Dresden Nuclear Power Station, Units 2 and 3  
Renewed Facility Operating License Nos. DPR-19 and DPR-25  
NRC Docket Nos. 50-237 and 50-249

**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, Dresden Nuclear 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 27, 2015 (ML15097A519)
3. Exelon Generation Company, LLC Letter to NRC, Dresden Nuclear 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 August 31, 2016 (ML16244A801)
4. Exelon Generation Company, LLC Letter to NRC, Dresden Nuclear 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 26, 2014 (ML14360A123)
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 the June 30, 2019, due date for submittal of the Seismic Probabilistic Risk Assessment (SPRA) for the Dresden Nuclear Power Station, Units 2 and 3. EGC is requesting that the due date be extended to December 31, 2019.

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 Dresden Nuclear 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 Dresden Nuclear 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 June 30, 2019 for submittal of an SPRA for Dresden Nuclear Power Station, Units 2 and 3.

The SPRA for Dresden Nuclear Power Station, Units 2 and 3 commenced in October 2016. The initial scope of the Dresden SPRA included structural modeling of one Unit's Reactor Building (RB) and one Unit's Turbine Building (TB) along with other buildings containing safety related systems, structures, and components. As the project progressed and more detailed studies were performed, it was determined that the initial scope of the Dresden SPRA needed to be expanded to include additional safety related buildings; as well as additional structural modeling and analysis to address both Units' RB and TB, and the shared Control Room structure, as one monolithic structure. Also, the scope of the Dresden SPRA needed to be expanded to include the Hardened Containment Vent System (HCVS) components and vent structure in the structural model.

In addition, based on industry experience in performing SPRAs it was determined that the Dresden SPRA initial project schedule duration for completing the SPRA Peer Review and resolution of any resulting Findings and Observations did not provide an adequate amount of time for this effort.

EGC has developed a detailed schedule for the associated activities which indicates that the final Dresden Nuclear Power Station, Units 2 and 3 SPRA can be submitted to the NRC by December 31, 2019. 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 Dresden Nuclear 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 Dresden Nuclear 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 14<sup>th</sup> day of May 2018.

Respectfully,

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

Patrick R. Simpson  
Manager - Licensing  
Exelon Generation Company, LLC

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

cc: Regional Administrator - NRC Region III  
NRC Senior Resident Inspector – Dresden Nuclear Power Station  
NRC Project Manager, NRR – Dresden Nuclear 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  
Illinois Emergency Management Agency - Division of Nuclear Safety

ENCLOSURE

Dresden Nuclear Power Station, Units 2 and 3  
Request for Extension of Seismic Probabilistic Risk Assessment  
Submittal Date

(5 Pages)

## **Request for Extension of Seismic Probabilistic Risk Assessment Submittal Date**

This enclosure provides the details of Exelon Generation Company, LLC's (EGC's) request for an extension of the June 30, 2019 due date for submittal of the Dresden Nuclear Power Station, Units 2 and 3 Seismic Probabilistic Risk Assessment (SPRA). EGC is requesting that the due date be extended to December 31, 2019.

### **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 Dresden Nuclear Power Station, Units 2 and 3 seismic hazard reevaluation was documented in Reference B. As indicated in Reference B, the reevaluated seismic hazard for Dresden Nuclear 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 Dresden Nuclear 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 June 30, 2019, 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 Dresden Nuclear Power Station, Units 2 and 3 by the June 30, 2019, date specified by Reference D. The SPRA for Dresden Nuclear Power Station, Units 2 and 3 commenced in October 2016. The initial scope of the Dresden SPRA included structural modeling of one Unit's Reactor Building (RB) and one Unit's Turbine Building (TB) along with other buildings containing safety related systems, structures, and components (Unit 2/3 Cribhouse and Chimney). As the project progressed and the Seismic Equipment List (SEL) was developed for the Dresden SPRA project, it was determined that the SPRA modeling and analysis needed to include the Station Blackout (SBO) Building, the Unit 2/3 Isolation Condenser Makeup Pump Building, and the FLEX Storage Buildings A and B. Furthermore, as more detailed studies were performed, it was determined that the initial scope of the Dresden SPRA needed to be expanded to include additional structural modeling and analysis for both Units' RB and TB, and the shared Control Room structure as one monolithic structure since they are integrally constructed and dynamically coupled, in addition to being asymmetric structures with the Unit 2/3 Emergency Diesel Generator (EDG) and High Pressure Coolant Injection (HPCI) System Building which are integrally constructed with the Unit 3 RB and the Unit 2 TB structure. Also, the scope of the Dresden SPRA needed to be expanded to include the Hardened Containment Vent System (HCVS) components and vent structure in the structural model.

In addition, based on industry experience in performing SPRAs it was determined that the Dresden SPRA initial project schedule duration for completing the SPRA Peer Review and resolution of any resulting Findings and Observations did not provide an adequate amount of time for this effort. The effort to resolve any Findings and Observations resulting from the Peer Review effort typically requires at least a six-month duration, and final SPRA submittal dates are

typically one year from completion of the Peer Review. The project schedule for the Dresden SPRA supports completion of the Peer Review in January 2019.

EGC has developed a detailed schedule for the associated activities which indicates that the final Dresden Nuclear Power Station, Units 2 and 3 SPRA can be submitted to the NRC by December 31, 2019.

#### Requested Extension

EGC requests that the due date for submittal of the Dresden Nuclear Power Station, Units 2 and 3 SPRA be extended to December 31, 2019. 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 Dresden Nuclear 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 maintain the Dresden Nuclear 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), Dresden Nuclear 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. All NRC open and confirmatory items have been closed as documented in Reference H. In the NRC Safety Evaluation (Reference I) the NRC Staff concluded that Dresden Nuclear Power Station, Units 2 and 3 developed guidance and designs that adequately address the requirements of Orders EA-12-049 and EA-12-051 regarding implementation of the mitigating strategies and reliable SFP instrumentation required by these orders. In conjunction with the completion of Expedited Seismic Evaluation Process (ESEP) related activities as discussed below, Dresden Nuclear 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 Dresden Nuclear 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 Dresden Nuclear 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.

Dresden Nuclear 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 Dresden Nuclear 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 Dresden Nuclear 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 Dresden Nuclear 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. In Reference N, the NRC Staff concluded that implementation of the SFP integrity evaluation met the criteria of the SFP Evaluation Guidance Report for Dresden Station.

Finally, a Seismic Mitigating Strategies Assessment (SMSA) has been conducted (Reference O). The SMSA used the methodology described in Appendix H of NRC-endorsed NEI 12-06 (Reference M) and determined that the mitigating strategies for Dresden Nuclear Power Station, Units 2 and 3 are acceptable considering the impacts of the reevaluated seismic hazard.

### Conclusion

EGC has performed all previous Near-Term Task Force related actions for Dresden Nuclear 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 the additional structural modeling and analysis described above, as well as to provide sufficient time to perform the SPRA Peer Review and resolve any resulting Findings and Observations.

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 Dresden Nuclear 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-14-067), dated March 31, 2014 (ML14091A012)
- C. NRC Letter to Exelon Generation Company, LLC, Dresden Nuclear 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 Relating to Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated April 27, 2015 (ML15097A519)
- 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. Exelon Generation Company, LLC Letter to NRC, Dresden Nuclear 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 August 16, 2016 (ML16230A487)
- I. NRC Letter to Exelon Generation Company, LLC, Dresden Nuclear Power Station, Units 2 and 3 – Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051, dated February 16, 2017
- J. NRC Letter to Exelon Generation Company, LLC, Dresden Nuclear Power Station, Units 2 and 3 - Staff Review of Interim Evaluation Associated with Reevaluated Seismic Hazard Implementation Near-Term Task Force Recommendation 2.1," dated June 30, 2015 (ML15173A244)
- 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, Dresden Nuclear 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 August 31, 2016 (ML16244A801)
- M. NEI Report NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 4, dated December 2016
- N. NRC Letter to Exelon Generation Company, LLC, Dresden Nuclear Power Station, Units 2 and 3 - Staff Review of Spent Fuel Pool Evaluation Associated with Reevaluated Seismic Hazard Implementing Near-Term Task Force Recommendation 2.1, dated November 8, 2016
- O. Exelon Generation Company, LLC Letter to NRC, Dresden Nuclear Power Station, Units 2 and 3 – Mitigating Strategies Assessment (MSA) Report for the Reevaluated Seismic Hazard Information – NEI 12-06, Appendix H, Revision 2, H.4.4 Path 4: GMRS < 2xSSE, dated August 31, 2017