## REQUEST FOR ADDITIONAL INFORMATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION DRESDEN 2 AND 3 - LICENSE AMENDMENT TO ADOPT TSTF-505 AND TSTF-591 CONSTELLATION ENERGY GENERATION, LLC DRESDEN, UNITS 2, 3 DOCKET NO. 05000237, 05000249 ISSUE DATE: 03/25/2025

## **Regulatory Basis**

Section 3.3.5, "External Events Considerations," of NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0-A (ADAMS Accession No. ML12286A322) states, "It is the intent of the RMTS process to consider total plant risk."

Section 2.3.1, Item 7, of NEI 06-09 states that the "impact of other external events risk shall be addressed in the RMTS program" and explains that one method to do this is by documenting prior to implementing the RMTS program that external events that are not modeled in the probabilistic risk assessment (PRA) are not significant contributors to configuration risk. The NRC staff's final safety evaluation (SE) (ADAMS Accession No. ML071200238) for NEI 06-09 states that "[o]ther external events are also treated quantitatively, unless it is demonstrated that these risk sources are insignificant contributors to configuration-specific risk." Alternatively, section 2.3.1, Item 7, of NEI 06- 09 states that external event risk can be addressed by "performing a reasonable bounding analysis and applying it along with the internal events risk contribution in calculating the configuration risk and the associated Risk-Informed Completion Time (RICT)." The NRC staff's SE for NEI 06-09 states that "[w]here PRA models are not available, conservative or bounding analyses may be performed to quantify the risk impact and support the calculation of the RICT."

Section C.1.2.6 of Regulatory Guide (RG) 1.200, Revision 3, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-informed Activities" (ADAMS Accession No. ML20238B871), states that the contribution of many external events to CDF and LERF can be screened out: "(1) if it meets the criteria in the 1975 or later revision of NUREG-0800; (2) if it can be shown using a demonstrably conservative analysis that the mean value of the design-basis hazard used in the plant design is less than 1x10<sup>-5</sup> per year and that the conditional core damage probability is less than 1x10<sup>-1</sup>, given the occurrence of the design-basis-hazard event; or (3) if it can be shown using demonstrably conservative analysis that the CDF is less than 1x10<sup>-6</sup> per year." The screening criteria listed in section C.1.2.6 of RG 1.200 are consistent with those in section 6-2.3 of the 2009 American Society of Mechanical Engineers/American Nuclear Society (ASME/ANS) PRA Standard (RA-Sa-2009), "Addenda to ASME/ANS RA-S-2008, Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."

## **Dresden TSTF-505 Screening of External Flooding**

Section 3.3.5, "External Events Considerations," of NEI 06-09, Revision 0-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines" (ADAMS Accession No. ML12286A322), states, "It is the intent of the RMTS process to consider total plant risk."

Section 2.3.1, item 7, of NEI 06-09 states that the "impact of other external events risk shall be addressed in the RMTS program" and explains that one method to do this is by documenting prior to implementing the RMTS program that external events that are not modeled in the probabilistic risk assessment (PRA) are not significant contributors to configuration risk. The NRC staff's final safety evaluation (SE) (ADAMS Accession No. ML071200238) for NEI 06-09 states that "[o]ther external events are also treated quantitatively, unless it is demonstrated that these risk sources are insignificant contributors to configuration-specific risk." Alternatively, section 2.3.1, item 7, of NEI 06-09 states that external event risk can be addressed by "performing a reasonable bounding analysis and applying it along with the internal events risk contribution in calculating the configuration risk and the associated Risk-Informed Completion Time (RICT)." The NRC staff's SE for NEI 06-09 states that "[w]here PRA models are not available, conservative or bounding analyses may be performed to quantify the risk impact and support the calculation of the RICT."

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Section 5.2.4.3 of enclosure 4 of the Dresden TSTF-505 LAR, regarding combined effects flooding, states that the Dresden units would be in cold shutdown by the time the water level reaches 513 feet and service water pumps are secured. The combined effects flood external flooding hazard was screened based on "Preliminary Screening Criteria C5, 'Event develops slowly, allowing adequate time to eliminate or mitigate the threat.'" Contrary to the licensee's basis for screening the combined effects flood, shutting down the reactors will reduce some of the risk posed by external flooding, but shutting down the reactors does not by itself fully eliminate or mitigate the threat.

Since preliminary screening criteria C5 has not been adequately demonstrated to be applicable, provide the following to address the combined effects flood external hazard.

a. Provide justification using one of the following criteria in section C.1.2.6 of RG 1.200, revision 3 - (2) if it can be shown using a demonstrably conservative analysis that the mean value of the design-basis hazard used in the plant design is less than  $1 \times 10^{-5}$  per year and that the conditional core damage probability is less than  $1 \times 10^{-1}$ , given the occurrence of the design-basis-hazard event; or (3) if it can be shown using demonstrably conservative analysis that the CDF is less than  $1 \times 10^{-6}$  per year."

The justification should include consideration of and, as applicable, the basis for the following factors:

- The frequency of the combined effects flooding hazard at flooding elevations of significance.
- The impact the combined effects flooding hazard has (at flooding elevations of significance)

on plant operation and structures including the ability to cope with the hazard.

- The reliability of flood protection measures.
- The reliability of human actions.

• Consideration of uncertainties and wind wave effects in the determination of demonstrably conservative mean values as discussed in section 6.2-3 of ASME/ANS RA-Sa-2009.

b. Alternatively – as allowed by section 2.3.1, item 7, of NEI 06-09 – perform a reasonable bounding analysis quantifying the risk for the combined effects flood external event. Also discuss how the quantified risk will be applied along with the internal events risk contribution in calculating the configuration risk and the associated RICT.

The justification should include consideration of and, as applicable, the basis for the following factors:

- The frequency of the combined effects flooding hazard at flooding elevations of significance.
- The impact the combined effects flooding hazard has (at flooding elevations of significance) on plant operation and structures including the ability to cope with the hazard.
- The reliability of flood protection measures (if applicable).
- The reliability of human actions (if applicable).

• Consideration of uncertainties and wind wave effects in the determination of demonstrably conservative mean values as discussed in section 6.2-3 of ASME/ANS RA-Sa-2009.

c. If the external flooding hazard is screened out in item (a), discuss how it will be ensured that assumptions related to the availability and the functionality of flood protection features that are credited for the screening remain valid during RICTs such that the external flooding hazard continues to have an insignificant impact on the configuration-specific risk.

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