



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 8, 2019

Vice President, Operations  
Entergy Nuclear Operations, Inc.  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT – NRC RESPONSE TO REQUEST FOR  
DEFERRAL OF ACTIONS RELATED TO BEYOND-DESIGN-BASIS SEISMIC  
HAZARD REEVALUATIONS (EPID NO. L-2019-JLD-0000)

Dear Sir or Madam:

The purpose of this letter is to provide the U.S. Nuclear Regulatory Commission (NRC) staff's response to the letter received from Entergy Nuclear Operations, Inc. (the licensee) on March 20, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML19079A022). In this letter, the licensee requested deferral of actions related to post-Fukushima seismic hazard reevaluations until after the planned permanent shutdown of the Palisades Nuclear Plant (Palisades) on May 31, 2022.

The March 20, 2019, letter relates to commitments associated with post-Fukushima seismic hazard reevaluations and requests deferral of the completion dates of the seismic probabilistic risk assessment (SPRA) and other actions associated with the seismic hazard reevaluations of Palisades until December 31, 2022. As described below, the NRC staff has determined that deferring these actions related to the seismic hazard reevaluations is acceptable and that the deferral poses no immediate safety concern.

#### BACKGROUND

By letter dated March 12, 2012 (ADAMS Accession No. ML12053A340), the NRC issued a request for information under Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (hereafter referred to as the 50.54(f) letter), to all nuclear power reactor licensees and construction permit holders in response to lessons learned from the March 2011 accident at Japan's Fukushima Dai-ichi nuclear power plant. Enclosure 1 of the 50.54(f) letter requested that licensees perform seismic hazard reevaluations using present-day methodologies and guidance, and then assess the impact of the reevaluated hazard on the plant (e.g., through an SPRA). The NRC staff would then review the completed responses to these assessments to determine whether there is a need for any additional regulatory actions, such as a plant-specific backfit.

Concurrent with the reevaluation of seismic hazards, licensees were required to develop and implement mitigating strategies under NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735).

By letter dated October 27, 2015 (ADAMS Accession No. ML15194A015), the NRC decided which licensees were to perform: (1) an SPRA; (2) limited scope evaluations; or (3) no further actions based on a comparison of the reevaluated seismic hazard and the site's design-basis earthquake. As documented in that letter, Palisades is expected to complete an SPRA and a limited-scope evaluation for the spent fuel pool (SFP). The SPRA was expected to be submitted to the NRC by September 30, 2019. The SFP evaluation was submitted by the licensee and reviewed by the NRC staff, as documented by letter dated December 14, 2016 (ADAMS Accession No. ML16342C530).

The licensee's requested seismic deferral is based, in part, on the limited remaining operational period for Palisades. By letter dated October 19, 2017 (ADAMS Accession No. ML17292A032), the licensee informed the NRC of its intention to shut down Palisades by May 31, 2022.

In its March 20, 2019, letter, the licensee requested deferral of the completion dates for the Palisades SPRA and associated commitments to December 31, 2022. The deferral request letter also asserts that the licensee has completed other subsequent reviews of seismic risk to conclude that pending commitments from previous 50.54(f) seismic evaluations (ADAMS Accession No. ML17103A007) would not warrant a significant risk reduction. As discussed in the Enclosure, the NRC staff audited supporting documents associated with the subsequent reviews of seismic risk and considered them along with other available information to develop the technical basis to review the requested deferral.

## EVALUATION

The staff's evaluation of the licensee's request and commitment changes for the seismic hazard reevaluations is contained in the Enclosure. As described in the enclosure, the staff considered the following factors in its evaluations:

- Palisades has achieved additional defense in depth for coping with an extended loss of alternating current power and loss of normal access to the ultimate heat sink due to external events, including those caused by seismic and flooding events, as a result of the licensee's compliance with Orders EA-12-049 and EA-12-051, "Reliable Spent Fuel Pool Instrumentation" (ADAMS Accession No. ML12056A044). The NRC verified through inspection (NRC Inspection Report 05000255/2016008, ADAMS Accession No. ML16337A098) that the mitigation strategies and SFP level instrumentation have been appropriately implemented at Palisades. The NRC inspectors did not identify any findings or violations of more than minor significance.
- For the deferral of the SPRA, the staff considered: (1) the results and pertinent risk insights of previous and current evaluations of seismic risk at Palisades; (2) the additional defense-in-depth equipment and capabilities at the site; (3) the seismic design margin existing in nuclear power plants; (4) the documented ability of Palisades to cope with earthquakes larger than their design-basis earthquakes; (5) the remaining operational lifetime of Palisades; and (6) information regarding the seismic capacity of the SFPs.
- Considering the remaining operational period, there is not sufficient time to implement potential changes identified by the SPRA evaluations prior to permanently defueling the plant such that a meaningful, further safety improvement will be achieved. This is because the remaining work would have to be completed, and if changes were identified that would result in a substantial safety increase, these changes would have to be designed, approved, and scheduled for installation.

- If the licensee decides to continue to operate the unit beyond 2022, the licensee would need to provide the SPRA associated with the seismic hazard reevaluations at Palisades by December 31, 2022.

### CONCLUSION

Based on the staff's evaluations in the Enclosure, and after consultation with the Director of the NRC's Office of Nuclear Reactor Regulation, the NRC is granting the licensee's request to defer the remaining activities related to the 50.54(f) letter request for information for seismic events. Accordingly, the SPRA completion is deferred until December 31, 2022.

If you have any questions, please contact Milton Valentin, Project Manager, at (301) 415-2864 or via e-mail at [Milton.Valentin@nrc.gov](mailto:Milton.Valentin@nrc.gov).

Sincerely,



Louise Lund, Director  
Division of Licensing Projects  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure:  
Evaluation of Entergy's Seismic Deferral  
Request for the Palisades Nuclear Plant

cc w/encl: Distribution via Listserv

Evaluation of Entergy's Seismic Deferral Request for  
the Palisades Nuclear Plant

By letter dated March 20, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19079A022), Entergy Nuclear Operations, Inc. (Entergy, the licensee) requested deferral of actions related to commitments associated with post-Fukushima seismic hazard reevaluations for the Palisades Nuclear Plant (Palisades) until after its planned permanent shutdown. The licensee requested deferral of the completion dates of the seismic probabilistic risk assessment (SPRA) and other actions associated with the seismic hazard reevaluations until December 31, 2022 (seven months after its planned shutdown). The licensee's deferral request is based on the limited remaining operational period for the plant, which would limit the time available to implement potential changes identified by the SPRA, and the existing capabilities to address a beyond-design-basis seismic event.

BACKGROUND

By letter dated March 12, 2012 (ADAMS Accession No. ML12053A340), the NRC issued a request for information under Title 10 of the *Code of Federal Regulations*, Section 50.54(f), (hereafter referred to as the 50.54(f) letter), to all nuclear power reactor licensees and construction permit holders in response to lessons learned from the March 2011 accident at Japan's Fukushima Dai-ichi nuclear power plant. The 50.54(f) letter includes information requests related to the NRC's Near-Term Task Force report, "Near-Term Task Force Recommendations for Enhancing Reactor Safety in the 21st Century," issued July 12, 2011 (ADAMS Accession No. ML111861807). Enclosure 1 of the 50.54(f) letter requested that licensees perform seismic hazard reevaluations using present-day methodologies and guidance. Licensees would use the new hazard information to determine the need for, and scope of, plant specific assessments of the response to the reevaluated seismic hazards. The NRC staff would review the completed responses to these assessments to determine if there was a need for any additional regulatory actions, such as plant-specific backfits. The process for this regulatory review is described in a memorandum dated September 21, 2016 (ADAMS Accession No. ML16237A103).

By letter dated October 27, 2015 (ADAMS Accession No. ML15194A015), the NRC documented its final screening results and informed licensees of the remaining seismic evaluations to be performed. Based on that letter, Palisades was scheduled to perform and submit an SPRA by September 30, 2019. A limited-scope seismic evaluation of the spent fuel pool (SFP) was submitted by the licensee and reviewed by the NRC staff, as documented by letter dated December 14, 2016 (ADAMS Accession No. ML16342C530). The licensee also completed the Expedited Seismic Evaluation Process (ESEP) (ADAMS Accession No. ML14357A165). The NRC staff assessment of the ESEP report is documented in letter dated August 25, 2015 (ADAMS Accession No. ML15233A101). The ESEP report identified commitments that included anchorage modifications of two boric acid storage tanks, seismic walkdowns of inaccessible items listed in Section 7.1 of the ESEP report, modification of the primary makeup storage tank (PMST, also known as T-81) to enhance its seismic capacity, and to submit the fragility values for all tanks and inaccessible items mentioned before. The licensee's deferral of the SPRA submittal also provides the history of revisions made to these commitments.

## EVALUATION

By letter dated July 6, 2017 (ADAMS Accession No. ML17177A446), the NRC entered into the audit process described in Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008 (ADAMS Accession No. ML082900195), to assist in the timely and efficient closure of activities associated with the March 12, 2012, request for information associated with reevaluation of the seismic hazard at nuclear power plants pursuant to 10 CFR, Section 50.54(f) (ADAMS Accession No. ML12053A340). Entergy's Palisades was included in the list of applicable licensees. The staff exercised the audit process through an electronic reading room (ePortal).

The staff's evaluation of the licensee's request for deferral of activities and commitments associated with the seismic reevaluations followed the audit process mentioned above and considered several factors including: (1) the results and pertinent risk insights of previous and current evaluations of seismic risk at Palisades; (2) the additional defense-in-depth equipment and capabilities at the site; (3) the seismic design margin existing in nuclear power plants; (4) the documented ability of Palisades to cope with earthquakes larger than their design-basis earthquakes; (5) the remaining operational lifetime of Palisades; and (6) information regarding the seismic capacity of the SFPs. Below is a brief description of each consideration.

### Evaluations of Seismic Risk

#### *Previous SPRAs*

Palisades has a two-loop Combustion Engineering pressurized water reactor (PWR) in a dry, ambient pressure containment. Its operating license was granted in 1971 and renewed in 2007. In 1996, the licensee submitted an SPRA as part of the individual plant examination of external events<sup>1</sup> (IPEEE). The licensee concluded that the SPRA mean core damage frequency (CDF) was at least an order of magnitude less than the internal events CDF ( $10^{-5}/\text{yr}$ ), that the median fragility (capacity) of the plant was 0.488g peak ground acceleration (PGA) and that the high confidence of a low probability of failure (HCLPF) is 0.217g PGA (both of these results are higher than the Palisades safe shutdown earthquake (SSE) design basis of 0.20g PGA). The licensee also concluded that there are no dominant seismic failure modes contributing to the CDF; no accident classes (functional failures) met the screening requirements for reportability; non-seismic failures and operator errors are an important part of the SPRA CDF; and that the engineered safeguards equipment is inherently rugged with no seismic vulnerabilities. No physical modifications were needed for enhanced safety following the IPEEE SPRA. While it is difficult to fully compare the 1996 IPEEE analysis to the SPRA model developed in response to the seismic hazard reevaluation, the IPEEE results showed that Palisades should be capable of withstanding a beyond-design-basis earthquake event.

#### *Risk Evaluations Considering the Reevaluated Hazard*

Prior to the decision to commit to a permanent plant shutdown, Entergy developed an SPRA for Palisades. However, following the shutdown decision, Entergy requested a deferral of the formal submittal date and made a subsequent evaluation of seismic risk to assess the significance of a pending action associated with the reevaluated seismic hazard. The staff assessment of the subsequent evaluation is discussed in the section for Consideration of Potential Cost-Justified Substantial Safety Enhancements.

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<sup>1</sup> Entergy Document, "Palisades Nuclear Plant Individual Plant Examination of External Events (IPEEE)," Revision 1, May 1996.

The NRC staff also indicated that, based on its risk assessment for Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," (ADAMS Accession No. ML100270582), and using the reevaluated hazard, the fleet-wide seismic CDF estimates are at or below  $10^{-4}$ /year and, therefore, consistent with the Commission Safety Goal Policy Statement. During the audit, the licensee provided supporting information about its seismic risk, which was described to be in the range of  $10^{-6}$ /year CDF. The NRC staff audit did not identify anything that would contradict the licensee's supporting information.

#### Additional Defense-in-Depth Mitigation Equipment and Strategies

The NRC staff also considered the additional defense in depth that has been achieved for coping with an extended loss of alternating current power and loss of normal access to the ultimate heat sink due to external events, including those caused by seismic and flooding events, because of Palisades' compliance with Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735)," and Order EA-12-051, "Reliable Spent Fuel Pool Instrumentation (ADAMS Accession No. ML12056A044). The NRC staff issued a joint safety evaluation regarding implementation of these mitigating strategies and the reliable SFP level instrumentation on August 22, 2016 (ADAMS Accession No. ML16014A318). The same safety evaluation states that the mitigation strategies equipment is stored in two buildings and that both are designed against the beyond-design basis seismic event (in this case, the reevaluated seismic hazard). The safety evaluation concluded that the licensee has developed guidance and proposed strategies that, if implemented appropriately, should adequately address the requirements of the Orders. The NRC staff verified through inspection (Inspection Report 05000255/2016008, ADAMS Accession No. ML16337A098) that the mitigation strategies have been appropriately implemented at Palisades. The completion of this work results in a tangible safety benefit and an enhanced ability to mitigate beyond-design-basis events during the period of deferment. The orders will be codified after the Commission's approval of the rulemaking for Mitigation of Beyond-Design Basis Events (ADAMS Accession No. ML19023A038).

In addition to the safety benefits achieved by compliance with Orders EA-12-049 and EA-12-051, Palisades is also required to comply with the requirements of 10 CFR 50.54(hh)(2). Per this requirement, Palisades is required to implement guidance and strategies intended to maintain or restore core cooling, containment, and SFP cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire. At Palisades, the 50.54(hh)(2) equipment is stored in different locations than the equipment used for compliance with Order EA-12-049. Therefore, the 50.54(hh)(2) equipment represents an additional beyond-design-basis capability from that provided by the equipment associated with Order EA-12-049.

#### Seismic Design Margin

Information regarding the seismic design margin in nuclear plants, including NRC and industry studies summarized in the NRC's May 9, 2014 letter (ADAMS Accession No. ML14111A147), outlines reasons for continued operation while seismic reevaluations are performed. These reasons include a safety margin in the design such that plants can withstand potential earthquakes exceeding the original design-basis and that the fleet-wide seismic CDF because of the reevaluated hazard did not pose a concern regarding adequate protection of public health and safety. An example of a seismic margin report that demonstrates robustness of nuclear

plants is an Electric Power Research Institute (EPRI) report titled, "EPRI-NP-6041-SL, Revision 1: A Methodology for Assessment of Nuclear Power Plant Seismic Margin, Revision 1," dated August 1991 (ADAMS Accession No. ML16005A625).

The staff's assertions in the May 9, 2014, letter continue to be valid for the U.S. operating fleet, including Palisades, and indicate that the deferral of the remaining evaluations does not pose an unacceptable risk. Therefore, the basis for continued operation at Palisades remains unchanged, and applies throughout the requested deferral period.

As mentioned before, the IPEEE concluded that the median fragility (structural capacity) of the plant was 0.488g PGA and that the HCLPF value is 0.217g PGA. Both results are higher than the Palisades SSE design basis of 0.20g PGA. In its seismic hazard reevaluation report (ADAMS Accession No. ML14090A069), the licensee stated that the PGA value of the reevaluated seismic hazard is 0.283g, which is below the median fragility of the plant as documented in the IPEEE report. Also, the seismic hazard reevaluation report stated that the peak spectral acceleration (PSA) of the reevaluated seismic hazard is 0.559g at the frequency of 9 hertz (Hz). This is important because structures are most vulnerable around the 5-10 Hz frequency range. To assess if this PSA could add to the seismic CDF, the NRC staff referred to EPRI NP-6041-SL. The staff found that most of the safety related structures in the evaluation documented in Appendix A of EPRI NP-6041-SL should have an estimated HCLPF capacity of at least 0.5g. For this reason, the NRC staff believes that the PSA value should not represent additional risk for Palisades for the limited period of operation before permanent shutdown.

The ability of Palisades to cope with earthquakes larger than their design-basis earthquakes is documented in the ESEP report and additional clarifying information dated December 18, 2014 (ADAMS Accession No. ML14357A165), and July 2, 2015 (ADAMS Accession No. ML15183A317). The staff's assessment for the ESEP report can be found in the letter dated August 25, 2015 (ADAMS Accession No. ML15233A101). The staff's assessment concluded that the licensee demonstrated that a set of mitigation strategies equipment, which could be used to maintain or restore core cooling and containment function, has additional safety margin such that this equipment can cope with an earthquake two times the Palisades SSE.

However, the ESEP report identified commitments to address certain potential defects and to provide fragility information for inaccessible items. The ESEP commitments included anchorage modifications of two boric acid storage tanks (BASTs), perform seismic walkdowns of inaccessible items listed in ESEP Section 7.1, modify the PMST to enhance its seismic capacity, and to submit the fragility values for all items mentioned in the commitments. Regarding the commitment for performing seismic walkdowns to inaccessible items in Section 7.1 of the ESEP, the licensee reported to have completed these walkdowns in its letter dated April 13, 2017 (ADAMS Accession No. ML17103A007). In the same letter, the licensee reported to have developed fragilities for the same items and that no additional modifications were identified for those items. Also, in the same letter, the licensee changed the commitment associated with the PMST to use insights for the SPRA in identifying the optimal safety improvements for Palisades. Because of the SPRA deferral, the NRC staff assessed the potential risk of not addressing the commitment associated to the PMST during the remaining operational period of Palisades in the following paragraphs for Consideration of Potential Cost-Justified Substantial Safety Enhancements.

### Consideration of Potential Cost-Justified Substantial Safety Enhancements

The purpose of the 50.54(f) letter is to gain information to enable the NRC to determine whether nuclear reactor licenses should be modified, suspended, or revoked. One way of assessing the need for modifying, suspending, or revoking a license is by considering potential cost-justified substantial safety enhancements, as defined in NUREG-1409, "Backfitting Guidelines" (ADAMS Accession No. ML032230247). The SPRA is a tool that could help identify potential cost-justified substantial safety enhancements. However, other evaluations could help identify safety enhancements that may be substantial and cost-justified.

In the ESEP report, the licensee identified potential safety enhancements for Palisades and made commitments to address them. The commitments were intended to improve the seismic capacity of the PMST and to enhance the anchorage of the BASTs. Subsequently, Entergy submitted a letter dated April 18, 2016 (ADAMS Accession No. ML16111B168), which notified the NRC that the modification commitment to enhance the PMST seismic capacity was canceled, and that the risk insights from the SPRA results would be used to determine if this or other modifications would provide the best safety improvement.

In its deferral letter, the licensee reported to have completed the modifications to the BASTs. Also, in its deferral letter, the licensee mentioned that subsequent evaluations of seismic risk were completed to determine the seismic risk significance of the PMST. This subsequent evaluation was made available through an ePortal and the NRC staff reviewed it as part of the audit. Specifically, the licensee stated to have used the SPRA model to perform a sensitivity study by setting the fragility of the PMST to 0.0 g (always failed) instead of the baseline value of 0.48 g. After doing so, the licensee stated that the resulting CDF did not increase. For that reason, the licensee stated that the PMST is not risk significant from a seismic perspective, so enhancing its seismic capacity would not result in a substantial safety gain. After reviewing the supporting documents provided by the licensee, the staff did not identify any issues that would change the response to the deferral request.

In addition, the design of the PMST was reviewed as part of the work done for the mitigation strategies against beyond-design-basis events. The PMST is credited to provide additional makeup inventory for core cooling. The licensee also stated that the PMST was modified to be fully protected from the SSE event. However, the PMST is not the only source for additional core cooling makeup. The licensee stated that, if the PMST were to be compromised, the FLEX Support Guidelines (FSGs) direct operators to align alternate suction inventory from other available water sources to supply the additional makeup needed for core cooling. For this reason, the NRC staff believes that losing the PMST should not result in increased CDF. Further details of this evaluation are provided in the NRC staff safety evaluation of the Palisades mitigation strategies against beyond-design basis events (ADAMS Accession No. ML16014A318).

### Remaining Operational Lifetime at Palisades

The licensee has requested to defer the submittal of its SPRA considering the upcoming shutdown scheduled for May 31, 2022. Deferring the submittal of its SPRA should not limit the licensee's ability to comply with regulations or to operate safely. During this period, the licensee shall continue to operate within the safety limits and controls established by its license. By continuing its compliance with existing regulations and its license, the remaining operational lifetime of Palisades should not pose additional risk to the public or the environment.



### Spent Fuel Pool

As part of the activities associated with the seismic hazard reevaluation at Palisades, the licensee submitted an evaluation of that concluded that the spent fuel should be adequately protected against seismically induced failures that could drain the SFP. The NRC staff agreed with the licensee's assessment of the Palisades SFP as documented in letter dated December 14, 2016 (ADAMS Accession No. ML16342C530). In addition, the mitigating strategies implemented as part of Order EA-12-049 include capabilities beyond the installed plant systems to add cooling water to the SFP. The licensee has also installed additional SFP level instrumentation as required by NRC Order EA-12-051. These measures have improved the licensee's ability to address a loss of SFP cooling resulting from either a loss of electrical power or a loss of water inventory from the pool. The NRC staff documented its assessment of regulatory actions going beyond the issued orders in COMSECY-13-0030, "Staff Evaluation and Recommendations for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Spent Fuel," dated November 12, 2013 (ADAMS Accession No. ML 13329A918). The assessment was supported by detailed analyses documented in NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor" (ADAMS Accession No. ML14255A365). These recent studies supported the findings in past evaluations that SFPs are robust structures that are likely to withstand severe earthquakes without leaking.

By letter dated February 28, 2017 (ADAMS Accession No. ML17034A408), the NRC endorsed the Electric Power Research Institute's (EPRI's) Report 3002009564, "Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation" (ADAMS Accession No. ML17031A176). This report provided guidance for conducting seismic evaluations of SFPs. The methodology of the EPRI report credits screening criteria and seismic capacity calculations based on the accepted methods of assessing seismic capacity shown in EPRI NP-6041-SL. The EPRI NP-6041-SL report forms the basis for the EPRI 3002009564 document's conclusion that SFPs that were designed to a safe shutdown earthquake with a PGA of at least 0.1g have a high confidence of a seismic capacity that exceeds 0.8g. The Palisades SFP was designed to the design basis earthquake with a PGA of 0.2g. As mentioned earlier, the PGA for the reevaluated seismic hazard is less than 0.3g. For these reasons, the NRC staff concludes that the SFP at Palisades should not be compromised by the reevaluated seismic hazard.

### REGULATORY COMMITMENTS

In its deferral request letter dated March 20, 2019, the licensee proposed regulatory commitments to complete activities that will inform the SPRA. The NRC staff notes that NEI 99-04 "Guidelines for Managing NRC Commitments" (ADAMS Accession No. ML003680088), as endorsed by the NRC in SECY-00-0045, "Acceptance of NEI 99-04, "Guidelines for Managing NRC Commitments"" (ADAMS Accession No. ML003679799), provides an acceptable method to manage commitments. If the licensee were to change these regulatory commitments, the staff expects to be informed in accordance with the process outlined in NEI 99-04, as endorsed by the NRC.

### AUDIT REPORT

The July 6, 2017, generic audit plan describes the NRC staff's intention to issue an audit report that summarizes and documents the NRC's regulatory audit of licensee's submittals associated with reevaluated seismic hazard analyses. The NRC staff's Palisades audit was limited to the review of the information above. Because this staff assessment appropriately summarizes the

results of the audit, the NRC staff concludes a separate audit report is not necessary, and that this document serves as the audit report described in the July 6, 2017, letter.

### CONCLUSION

In summary, the licensee's deferral request has a technical basis that is supported by the results of the Palisades seismic risk evaluations. Compliance with NRC Orders EA-12-049 and EA-12-051 has provided a safety benefit and an enhanced ability to mitigate beyond-design-basis events during the period of deferment. The seismic capacity inherent in the design of nuclear power plants, and the site-specific evaluation of the seismic capacity of safe-shutdown equipment as documented by the ESEP provides additional assurance that Palisades can cope with an earthquake larger than the design-basis earthquake during the period of deferral. A similar conclusion was made for all plants that are developing an SPRA to support continued operation during the period of development.

SUBJECT: PALISADES NUCLEAR PLANT – NRC RESPONSE TO REQUEST FOR DEFERRAL OF ACTIONS RELATED TO THE BEYOND-DESIGN-BASIS SEISMIC HAZARD REEVALUATION (EPID NO. L-2019-JLD-0000)  
DATED May 8, 2019

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