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10 CFR 50.4
10 CFR 50.54(f)

Serial: RNP-RA/18-0063

NOV 29 2018

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

H. B. Robinson Steam Electric Plant, Unit 2
Docket Number 50-261/Renewed License Number DPR-23

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 (ADAMS Accession No. ML12053A340)
2. Duke Energy Letter, Seismic Hazard Evaluation, Response to NRC 10 CFR 50.54(f) 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 31, 2014 (ADAMS Accession No. ML14099A204)
3. Duke Energy Letter, Submittal of Revision to Seismic Hazard Evaluation to Include New Ground Motion Response Spectra (GMRS) Using New Geotechnical Data and Shear-Wave Testing for H. B. Robinson Steam Electric Plant, Unit No. 2, dated July 17, 2015 (ADAMS Accession No. ML 15201A006)
4. Duke Energy Letter, Addendum to Submittal of Revision to Seismic Hazard Evaluation to Include New Ground Motion Response Spectra (GMRS) Using New Geotechnical Data and Shear-Wave Testing for H. B. Robinson Steam Electric Plant, Unit No. 2, dated August 29, 2015 (ADAMS Accession No. ML 15243A061)

5. NRC Letter, H. B. Robinson Steam Electric Plant, Unit No. 2 - 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 October 19, 2015 (ADAMS Accession No. ML15280A199)
6. 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 Daiichi Accident, dated October 27, 2015 (ADAMS Accession No. ML15194A015)
7. NEI Letter to NRC, Seismic Risk Evaluations for Plants in the Central and Eastern United States, dated March 12, 2014 (ADAMS Accession No. ML14083A596)

Ladies and Gentlemen:

By letter dated March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Reference 1 to all power reactor licensees and holders of construction permits in active or deferred status. Enclosure 1 of Reference 1 requested each addressee located in the Central and Eastern United States to submit a Seismic Hazard Evaluation and Screening Report. Reference 2, as supplemented by References 3 and 4, provided the Seismic Hazard and Screening Report for H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP). Based on the results of the screening evaluation provided, it was determined that HBRSEP screens in for a risk evaluation (SPRA) (Reference 5). Reference 6 was issued by the NRC and established the due date for the HBRSEP SPRA as March 31, 2019.

Duke Energy requests an extension of the March 31, 2019 due date for submittal of the HBRSEP SPRA. The effort to prepare and submit the SPRA for HBRSEP is ongoing. Initial results indicate a need for additional analyses of the dominant functional/systemic sequences; a better understanding of the uncertainties and how they might affect the final results; and an effort to optimize actions to address identified plant-specific vulnerabilities. Additionally, the site peer review occurred the week of November 12, 2018.

A schedule has been developed for the associated activities which indicates that the final HBRSEP SPRA can be submitted to the NRC no later than October 31, 2019. Duke Energy is therefore requesting that the SPRA submittal due date be extended to October 31, 2019.

The enclosure to this letter provides the detailed extension request including background information and justification for the extension. As detailed in the enclosure, Duke Energy considers that continued plant operation during the extension period is justified.

There are no regulatory commitments associated with this letter.

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Please address any comments or questions regarding this matter to Kevin Ellis, Manager – Nuclear Regulatory Affairs, at (843) 951-1329 or kevin.ellis@duke-energy.com.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 29 NOV 2018.

Sincerely,

A handwritten signature in blue ink, appearing to read 'E. Kapopoulos, Jr.', written in a cursive style.

Ernest J. Kapopoulos, Jr.
Site Vice President

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

c: NRC Resident Inspectors, HBRSEP, Unit No. 2
Regional Administrator, NRC, Region II
Nate Jordan, NRC Project Manager, NRR

United States Nuclear Regulatory Commission
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6 Pages (including cover page)

ENCLOSURE

Request for Extension of Seismic Probabilistic Risk Assessment Submittal Date

Request for Extension of Seismic Probabilistic Risk Assessment Submittal Date

This enclosure provides the details of Duke Energy's request for an extension of the March 31, 2019, due date for submittal of H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP) Seismic Probabilistic Risk Assessment (SPRA). Duke Energy requests that the due date be extended to October 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. HBRSEP seismic hazard reevaluation was documented in Reference B. As indicated in Reference B, the reevaluated seismic hazard for HBRSEP 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 HBRSEP 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, 2019, to submit a SPRA for HBRSEP.

Although the SPRA for HBRSEP is not complete, there is an initial understanding of the potential seismic risk and possible plant vulnerabilities, including risk importance measures and significant sequences and/or cutsets. As such, Duke Energy has initiated an effort to develop cost-effective changes that will provide enhanced safety benefit and to reduce Seismic Core Damage Frequency (SCDF) / Seismic Large Early Release Frequency (SLERF). Additionally, the HBRSEP SPRA was peer reviewed against the ASME/ANS RA-Sb-2013, Case RA-S.C1 Alternate Approach: Part 5, Requirements for Seismic Events At-Power PRA, the week of November 12, 2018.

Requested Extension

Duke Energy requests that the due date for submittal of the HBRSEP SPRA be extended to October 31, 2019. This date is based on a schedule for the critical path activities necessary for that submittal: (1) The peer review team to issue its final report; (2) Duke Energy to determine resolutions for the peer review F&O; (3) develop an action plan for the peer review F&O resolutions; (4) execution of the action plan; (5) Identify solutions for plant-specific seismic vulnerabilities; (6) develop a schedule to implement the solutions, and (7) preparation of the SPRA submittal.

The proposed extension for submitting the SPRA for HBRSEP will ensure sufficient time to allow for an adequate close out of the peer review F&O, completion of the effort to optimize actions to address plant-specific seismic issues and development of the SPRA submittal.

Plant Operation During the Requested Extension Period

Duke Energy considers the requested extension to be justified with respect to continued plant operation during the extension period based on the considerations provided below.

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 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 HBRSEP. Within this subset, there is a range of dates by which licensees are to submit their SPRA evaluations. The range of dates began 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 HBRSEP 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), HBRSEP 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, HBRSEP 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 during the requested extension period.

As required by Reference A, Duke Energy 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. Duke Energy 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 a beyond-design-basis seismic event concurrent with an ELAP and LUHS. The NRC Staff review (Reference J) of the HBRSEP ESEP concluded that the assessment provided assurance that supported continued plant safety while the longer-term seismic evaluation is completed.

HBRSEP 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 HBRSEP ESEP report, Duke Energy confirmed that the reasons for continued operation cited in the EPRI report and Reference E applied to HBRSEP. 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 Ground Motion Response Spectrum peak spectral acceleration documented in Reference B. The HBRSEP 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) will be submitted by January 31, 2020. The SMSA uses the methodology described in Appendix H of NRC-endorsed NEI 12-06 (References M and N) and is dependent on the SPRA results for the determination of the evaluation methodology.

Conclusion

Additional evaluations and analysis are needed to optimize actions to address identified plant-specific vulnerabilities. This effort would involve the refinements of the SPRA models, including quantification runs, the performance of additional uncertainty analysis and sensitivity analysis. Duke Energy is therefore requesting that the HBRSEP SPRA submittal due date be extended to October 31, 2019.

Duke Energy has performed all previous Near-Term Task Force related actions for HBRSEP in accordance with NRC established schedules. Previous Duke Energy and industry actions taken in response to the Near-Term Task Force recommendations 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 HBRSEP.

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 (ADAMS Accession No. ML12053A340)
- B. Duke Energy Letter, Seismic Hazard Evaluation, Response to NRC 10 CFR 50.54(f) 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 31, 2014 (ADAMS Accession No. ML14099A204)
- C. NRC Letter, H. B. Robinson Steam Electric Plant, Unit No. 2 - 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 October 19, 2015 (ADAMS Accession No. ML15280A199)
- 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 (ADAMS Accession No. ML15194A015)
- E. NRC Letter, 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 (ADAMS Accession No. ML14111A147)
- F. NRC Letter, Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012 (ADAMS Accession No. ML12054A736)
- G. NRC Letter, Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated March 12, 2012 (ADAMS Accession No. ML12054A682)
- H. NRC Letter, H. B. Robinson Steam Electric Plant, Unit No. 2 - Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051, dated June 12, 2015 (ADAMS Accession No. MLB15154B098)
- I. NRC Letter, H. B. Robinson Steam Electric Plant, Unit No. 2, Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051, March 31, 2016 (ADAMS Accession No. ML16075A377)
- J. NRC Letter, H. B. Robinson Steam Electric Plant, Unit No. 2 - Staff Review of Interim Evaluation Associated with Reevaluated Seismic Hazard Implementing Near-Term Task Force Recommendation 2.1, dated October 6, 2015 (ADAMS Accession No. ML15201A602)
- K. NEI Letter to NRC, Seismic Risk Evaluations for Plants in the Central and Eastern United States, dated March 12, 2014 (ADAMS Accession No. ML14083A596)

- L. Duke Energy Letter, 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 1, 2016 (ADAMS Accession No. ML16215A376)
- M. NEI Report NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 4, dated December 2016 (ADAMS Accession No. ML 163548421)
- N. JLD-ISG-2012-01, Revision 2, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated February 2017 (ADAMS Accession No. ML17005A188)