



March 31, 2021

ULNRC-06526

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

10 CFR 50.90
10 CFR 50.12
10 CFR 50.59(c)(2)

Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
RENEWED FACILITY OPERATING LICENSE NPF-30
REQUEST FOR LICENSE AMENDMENT AND REGULATORY EXEMPTIONS
FOR A RISK-INFORMED APPROACH TO ADDRESS GSI-191
AND RESPOND TO GL 2004-02 (LDCN 19-0014)**

Reference:

1. NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004 (ADAMS Accession No. ML042360586)
2. NRC Policy Issue SECY-12-0093, "Closure Options for Generic Safety Issue - 191, 'Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance,'" dated July 9, 2012 (Accession No. ML121310648)
3. Ameren Missouri Letter ULNRC-06528, "Path Forward for Resolution of GL 2004-02," dated September 24, 2019 (ADAMS Accession No. ML19268A169)

Pursuant to 10 CFR 50.90, "Application for amendment of license or construction permit," Ameren Missouri herewith requests an amendment to Renewed Facility Operating License Number NPF-30 for the Callaway Plant, as needed for Ameren Missouri's final resolution to addressing the concerns of Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on Pressurized-Water Reactor Sump and Performance," and for responding to Generic Letter (GL) 2004-02 (Reference 1). Additionally, in accordance with the provisions of 10 CFR 50.12, "Specific exemptions," Ameren Missouri (Union Electric Company) herewith requests exemptions from certain requirements of 10 CFR 50.46(a)(1), and Appendix A to 10 CFR Part 50, specifically General Design Criterion (GDC)

35, "Emergency Core Cooling," GDC 38, "Containment Heat Removal," and GDC 41, "Containment Atmosphere Cleanup."

The requested licensing actions include approval of a risk-informed approach to address the concerns of GSI-191 and support a finalized response to GL 2004-02 (consistent with what was previously described as the path forward for Callaway per the letter identified as Reference 3). Ameren Missouri seeks NRC approval based on a determination that the risk associated with the postulated failure mechanisms due to GSI-191 concerns meets the acceptance guidelines in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

The Ameren Missouri approach to addressing GSI-191 and resolving GL 2004-02 for Callaway is a combined deterministic and risk-informed approach using the "RoverD" methodology for implementing Option 2b of NRC Policy Issue SECY-12-0093 (Reference 2), as further described in the enclosures/attachments to this letter. This approach shows that the risk associated with debris from pipe breaks that generate quantities of debris that are not bounded by plant-specific prototypical testing is very small, in accordance with the acceptance criteria of RG 1.174. The effects of debris that is bounded by the plant-specific testing are deterministically shown to be mitigated in accordance with NRC-accepted methodology for resolution of GL 2004-02.

The risk associated with GSI-191 concerns includes consideration of the effects on long-term cooling due to debris accumulation on the containment recirculation sump strainers for the Emergency Core Cooling System (ECCS) and Containment Spray System (CSS) with the systems operating in the recirculation mode, as well as core flow blockage due to in-vessel effects, following loss-of-coolant accidents (LOCAs). A full spectrum of postulated LOCAs is analyzed, including double-ended guillotine breaks for all pipe sizes up to the largest pipe in the reactor coolant system. The changes to core damage frequency and large early release frequency associated with GSI-191 concerns are quantified by applying the LOCA frequencies published in NUREG-1829, "Estimating Loss-of-Coolant Accident (LOCA) Frequencies Through the Elicitation Process," and are then compared to RG 1.174 acceptance guidelines. Specifically, the results quantified in Enclosure 3, Attachment 3-3, in combination with the defense-in-depth and safety margin described in Enclosure 3, Attachment 3-4, meet the criteria of RG 1.174 for considering the risk from effects of LOCA debris to be in Region III (very small) such that no additional plant modification is required to close GL 2004-02 for Callaway Plant, Unit 1.

In light of the risk-informed approach taken to address GSI-191 and GL 2004-02, Enclosure 1 describes the proposed regulatory exemptions that are needed to support the risk-informed approach, which are being requested in accordance with the provisions of 10 CFR 50.12. Specifically, exemptions to certain provisions of 10 CFR 50.46(a)(1) and to the regulatory precedent for use of deterministic methods to demonstrate compliance with General Design Criteria 35, 38 and 41 of 10 CFR 50 Appendix A are proposed.

Pursuant to 10 CFR 50.90, Enclosure 2 provides the License Amendment Request (LAR) for approval of the proposed changes to the Callaway Plant, Unit 1 Technical Specifications and the method(s) of evaluation employed to establish a basis for the debris limits referenced in the revised Technical

Specifications (as proposed). Enclosure 2 includes Ameren Missouri's evaluation of the proposed changes, page markups and retyped pages for the affected Technical Specification (TS) pages. Specifically, Ameren Missouri is proposing creation of new TS 3.6.8, "Containment Recirculation Sumps," for requirements specific to the effects of containment debris, as well as relocation of TS Surveillance Requirement (SR) 3.5.2.8 from TS 3.5.2, "ECCS – Operating," to new TS SR 3.6.8.1; revision of TS 3.5.3, "ECCS – Shutdown" to remove reference to TS SR 3.5.2.8; and revision to TS 5.5.15, "Safety Function Determination Program," to clarify the application of TS LCO 3.0.6 to the containment sumps. The proposed TS changes are consistent with Technical Specifications Task Force traveler TSTF-567, Rev. 1, "Add Containment Sump TS to Address GSI-191 Issues."

It has been determined that this amendment application does not involve a significant hazards consideration, as determined per 10 CFR 50.92, "Issuance of amendment." Pursuant to 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," Section (b), no environmental impact statement or environmental assessment should need to be prepared in connection with issuance of the requested amendment.

Markups of the affected TS Bases pages, as well as pages from the Callaway Final Safety Analysis Report (FSAR), are also included in Enclosure 2 for information only (except for one part of the FSAR that is subject to NRC approval, as further explained in Enclosure 2). Final TS Bases changes will be processed under the program for updates per TS 5.5.14, "Technical Specifications Bases Control Program." The FSAR changes will be processed when the requested license amendment is implemented.

Enclosure 3 describes the "RoverD" methodology used by Ameren Missouri, including the risk-informed approach to addressing the GSI-191 issue as described in GL 2004-02, consistent with RG 1.174 guidance. It also includes a more direct response to GL 2004-02, following the NRC's content guide that was provided for detailing mostly deterministic methodologies supporting the risk-informed approach.

The Callaway Onsite Review Committee has reviewed and approved the proposed changes and has approved the submittal of this amendment application.

Ameren Missouri respectfully requests approval of the requested regulatory exemptions and license amendment prior to April 1, 2022. Ameren Missouri further requests that the license amendment be made effective upon NRC issuance, to be implemented within 120 days from the date of issuance.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," Section (b)(1), a copy of this amendment application is being provided to the designated Missouri State official.

This submittal does not contain new commitments. If there are any questions, please contact Mr. Tom Elwood at 314-225-1905.

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

Sincerely,



Stephanie P. Banker
Vice President, Nuclear Engineering
and Support

Executed on: March 31, 2021

JPK/mlp

Enclosures:

1. Request for Exemptions (General)
 - Attachment 1-1 Request for Exemption from 10 CFR 50.46(a)(1)
 - Attachment 1-2 Request for Exemption from GDC-35
 - Attachment 1-3 Request for Exemption from GDC-38
 - Attachment 1-4 Request for Exemption from GDC-41
2. License Amendment Request
 - Attachment 2-1 List of Commitments
 - Attachment 2-2 Technical Specification Page Markups
 - Attachment 2-3 Technical Specification Bases Page Markups (Information Only)
 - Attachment 2-4 Retyped Technical Specification Pages
 - Attachment 2-5 FSAR Page Markups (Information Only)
3. CEC Risk-Informed Approach Resolution to GSI-191
 - Attachment 3-1 Introduction
 - Attachment 3-2 Deterministic Basis
 - Attachment 3-3 Risk-Informed Basis
 - Attachment 3-4 Defense-In-Depth and Safety Margin
4. Acronyms and Definitions

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