



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

June 1, 2026

Mr. Kent Scott
Senior Vice President and
Chief Nuclear Officer
Ameren Missouri
Callaway Energy Center
8315 County Road 459
Steedman, MO 65077

SUBJECT: CALLAWAY PLANT, UNIT NO. 1 – REQUEST NO. I4R-06 – REQUEST FOR RELIEF CONCERNING EXAMINATION FOR THE FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL (EPID L-2025-LLR-0095)

Dear Mr. Scott:

By letter dated December 10, 2025, Union Electric Company, doing business as Ameren Missouri (Ameren, the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC) Relief Request I4R-06 for approval of relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code), Section XI, 2007 Edition through the 2008 Addenda at Callaway Plant, Unit No. 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(5)(iii), the licensee requested relief from the ASME Code, Section XI examination requirements on the basis that conformance with the code requirements is impractical.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Furthermore, the NRC staff has concluded that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the subject components. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(5)(iii). Therefore, the NRC staff grants relief pursuant to 10 CFR 50.55a(g)(6)(i) for the subject limited examinations, as described in Relief Request I4R-06, for the fourth 10-year inservice inspection interval at Callaway Plant, Unit No. 1.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

K. Scott

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If you have any questions, please contact me at 301-415-8371 or via email at Mahesh.Chawla@nrc.gov.

Sincerely,

Michael Mahoney, Acting Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosure:
Safety Evaluation

cc: Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INSERVICE INSPECTION LIMITED EXAMINATIONS

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By letter dated December 10, 2025 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML25344A257), Union Electric Company, doing business as, Ameren Missouri (Ameren, the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC, or the Commission) Relief Request I4R-06 for approval of relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 2007 Edition through the 2008 Addenda at Callaway Plant, Unit No. 1 (Callaway).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(5)(iii), "ISI [inservice inspection] program update: Notification of impractical ISI Code requirements," the licensee requested relief from the ASME Code, Section XI examination requirements on the basis that conformance with the code requirements is impractical.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), "Inservice inspection standards requirement for operating plants," ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except the design and access provisions and the preservice examination requirements, as set forth in the ASME Code, Section XI, to the extent practical within the limitations of design.

The regulations in 10 CFR 50.55a(g)(5)(iii) state that if licensees determine that conformance with certain ASME Code requirements is impractical, the licensee shall notify the Commission and submit information in support of the determination. Specifically, regulations in 10 CFR 50.55a(g)(5)(iii) state, "Determinations of impracticality in accordance with this section must be based on the demonstrated limitations experienced when attempting to comply with the [ASME] Code requirements during the inservice inspection interval for which the request is being submitted." Pursuant to 10 CFR 50.55a(g)(5)(iv), request for relief made in accordance with this

section must be submitted to the NRC no later than 12 months after the expiration of the initial 120-month inspection interval or subsequent 120-month inspection interval for which relief is sought.

The regulation in 10 CFR 50.55a(g)(6)(i), "Impractical ISI requirements: Granting of relief," states, in part, that:

The Commission will evaluate determinations under paragraph (g)(5) of this section that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines are authorized by law and will not endanger life or property or the common defense and security, and are otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The licensee requested relief from the ASME Code, Section XI, requirements pursuant to 10 CFR 50.55a(g)(5)(iii). The licensee's request for relief is applicable to the fourth 10-year ISI interval at Callaway. The applicable Code of Record for the fourth 10-year ISI interval is the ASME Code, Section XI, 2007 Edition through the 2008 Addenda.

The licensee submitted Relief Request I4R-06 within 1 year after the completion of the fourth 10-year ISI interval, satisfying the requirements of 10 CFR 50.55a(g)(5)(iv), "ISI program update: Schedule for completing impracticality determinations."

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request, and for the NRC to authorize, the proposed relief request.

3.0 TECHNICAL EVALUATION

3.1 Relief Request 14R-06

3.1.1 Examination Category B-B

3.1.1.1 Applicable ASME Code Requirements

The examination requirements for ASME Code Class 1, Examination Category B-B, "Pressure-Retaining Welds in Reactor Vessels," Item No. B2.40, specify volumetric examination of the steam generator bottom head-to-tubesheet welds in accordance with figure IWB-2500-6. The extent of examination is required to be essentially 100 percent of the required examination volume, as specified in IWA-2200(c) of the 2008 Addenda of the ASME Code, Section XI.

Table 1, below, provides a summary of the examinations for Examination Category B-B welds for which the licensee is seeking relief on the basis that conformance with the ASME Code, Section XI requirements is impractical as it would require extensive structural modifications to the component or surrounding structure.

Table 1: ASME Code, Section XI, Examination Category B-B

Component ID	Weld Description	Coverage Achieved (%)	Examination Results
2-EBB01A-RSG-SC001	Bottom Head-to-Tubesheet Weld	77.5	No Recordable Indications
2-EBB01D-RSG-SC001	Bottom Head-to-Tubesheet Weld	77.5	No Recordable Indications
2-EBB01B-RSG-SC001	Bottom Head-to-Tubesheet Weld	77.5	No Recordable Indications

3.1.1.2 Licensee's Reason for Request

Due to component design configuration limitations, the licensee was unable to obtain the ASME Code-required examination coverage for the components identified in table 1. The licensee stated that the subject welds were examined to the maximum extent practical and that the physical component configuration, interference from permanent plant equipment, and single-sided access restricted the scanning area, resulting in limited coverage. The licensee clarified that further coverage would require extensive structural modifications to the component or surrounding structure.

3.1.1.3 Proposed Alternative

The licensee stated that obtaining the required examination coverage is impractical due to physical obstructions and limitations imposed by original plant design and fabrication; therefore, no alternative examination for additional ultrasonic testing (UT) examination coverage is proposed.

The licensee determined that based on the volumetric coverage obtained, along with the ASME Code-required system pressure tests, it is reasonable that if significant service-induced degradation were occurring, it would have been evident by the examinations and testing that were performed.

3.1.1.4 NRC Staff Evaluation

The NRC staff evaluated Relief Request I4R-06, pursuant to 10 CFR 50.55a(g)(6)(i), to determine whether: (1) sufficient technical justification exists to support the determination that the ASME Code requirements are impractical; (2) imposition of the Code-required examinations would result in a burden to the licensee; and (3) the licensee's proposed alternative (i.e., accepting the reduced inspection coverage in these cases, periodic system pressure tests, and VT-2 visual examinations performed during each refueling outage associated with the Class 1 leakage test), provides reasonable assurance of structural integrity and leak tightness of the subject welds. The NRC determined that if these three criteria are met, then the requirements of 10 CFR 50.55a(g)(6)(i) will also be met.

Impracticality of Compliance

The licensee stated that the design of Callaway provides access for examinations. However, component design configurations with conditions resulting in examination limitations did not allow for the full required examination volume coverage. The licensee explained that when

examined, the welds listed in its submittal did not receive the required ASME Code examination coverage due to physical component configuration, interference from permanent plant equipment, and single-sided access. These conditions resulted in scanning access limitations that prohibited essentially 100 percent examination coverage (i.e., greater than 90 percent) of the required examination volumes. When this situation occurred, Callaway performed the required examinations to the maximum extent practical. The licensee provided a summary of the examination limitations for each component for which relief was requested.

The NRC confirmed that the Examination Category B-B weld configurations in the request prevented the licensee from scanning the welds from the opposite side. Additionally, as shown in the coverage plots and technical descriptions included in the licensee's submittal, the subject components have access limitations which resulted in reduced volumetric examination coverage.

Based on its review of the submittal, including the provided diagrams, the NRC staff finds that due to geometric limitations associated with the subject welds, it was impractical to meet the ASME Code-required "essentially 100 percent" volumetric examination coverage for the subject welds during the fourth 10-year ISI interval for Callaway.

Burden of Compliance

The licensee stated that for each weld in the scope of this request, conformance with the requirements is impractical as it would require extensive structural modifications to the component or surrounding structure.

The NRC staff finds that replacing, reconfiguring, or modifying the components of the subject welds in order to increase the examination coverage are the only reasonable means to achieve greater than 90 percent of the required ASME Code examination volume, and that replacement or reconfiguration of the subject components constitutes a burden on the licensee.

Structural Integrity and Leak Tightness

The NRC staff's review considered whether the licensee's achieved examination coverage for the subject welds in Examination Category B-B, Item No. B2.40, provides reasonable assurance of structural integrity and leak tightness of the subject welds. This determination was based on: (1) the examination coverage achieved and (2) the safety significance of unexamined volumes and unachievable coverage.

In evaluating the licensee's achieved examination coverage, the NRC staff assessed whether the licensee obtained as much coverage as reasonably possible and the manner in which the licensee reported the coverage achieved. From its review of the submittal, the NRC staff determined that:

- The welds were examined using the appropriate equipment, UT modes of propagation, probe angles, frequencies, and scanning directions to obtain maximum coverage.
- The coverage was calculated in a reasonable manner.
- The personnel and procedures utilized for the examination were qualified as required by the ASME Code, Section XI.

- The coverage was limited due to physical limitations or access.
- No unacceptable indications were identified.

The NRC staff reviewed the achieved examination coverage for the bottom head-to-tubesheet welds identified in table 1, above. The examination coverage achieved for these welds was 77.5 percent of the required examination volume. The NRC staff reviewed the coverage plots and technical descriptions provided in the licensee's submittal and finds that the licensee demonstrated that physical limitations exist to obtain essentially 100 percent of the ASME Code-required examination coverage for the respective components addressed by Examination Category B-B, Item No. B2.40. Additionally, the NRC staff finds that the licensee performed the ASME Code, Section XI required examinations to the maximum extent practicable.

In addition to the coverage analysis described above, the NRC staff evaluated the environmental conditions affecting the unexamined volumes of welds and unachievable coverage. Based on its review of the submittal, the NRC staff determined that the licensee's volumetric examinations covered, to the extent possible, the regions that are typically susceptible to higher stresses and, therefore, more susceptible to potential degradation. The licensee did not detect any recordable indications in the volumes examined. Therefore, based on the coverage achieved by the qualified inspection method and the examination of the subject welds to the extent possible, the NRC staff finds it reasonable that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that the licensee performed.

Based on the aggregate coverage obtained for the subject components, the extent of the examinations, and considering the licensee's performance of essentially 100 percent coverage for the accessible portion of these welds, the NRC staff determined that some evidence of generic degradation mechanisms that may be occurring in these components would have been identified. Therefore, the NRC staff finds that the examinations performed provide reasonable assurance of the structural integrity and leak tightness of the subject Examination Category B-B welds for Callaway, and that full compliance with the ASME Code requirements for these welds would be an undue burden on the licensee.

The NRC staff also determined that, in addition to the required volumetric examinations, the subject welds have received and will continue to receive the ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P required system leakage test, as required for all pressure-retaining components. Despite reduced coverage of the required examination volume of the subject welds, the NRC staff finds that this system leakage test will provide additional assurance that any degradation, if it were to occur, would be detected.

3.1.2 Examination Category B-D

3.1.2.1 Applicable ASME Code Requirements

The examination requirements for ASME Code Class 1, Examination Category B-D, Item No. B3.110, "Full Penetration Welded Nozzles in Vessels," specify volumetric examination of the pressurizer nozzle-to-vessel welds in accordance with figure IWB-2500-7. The extent of examination is required to be essentially 100 percent of the required examination volume, as specified in IWA-2200(c) of the 2008 Addenda of the ASME Code, Section XI.

Table 2 below provides a summary of the examinations for Examination Category B-D welds for which the licensee is seeking relief on the basis that conformance with the ASME Section XI requirements is impractical as it would require extensive structural modifications to the component or surrounding structure.

Table 2: ASME Code, Section XI, Examination Category B-D

Component ID	Weld Description	Coverage Achieved (%)	Examination Results
2-TBB03-10B-A-W	Safety Nozzle A to Top Head Weld	75.65	No Recordable Indications
2-TBB03-10B-B-W	Safety Nozzle B to Top Head Weld	75.65	No Recordable Indications
2-TBB03-10B-C-W	Safety Nozzle C to Top Head Weld	75.70 76.00 74.50	No Recordable Indications
2-TBB03-10B-D-W	Relief Nozzle D to Top Head Weld	75.70 76.00 74.50	No Recordable Indications
2-TBB03-10C-W	Spray Nozzle C to Top Head Weld	82.70	No Recordable Indications
2-TBB03-10A-W	Surge Nozzle to Bottom Head Weld	54.80	No Recordable Indications

3.1.2.2 Licensee's Reason for Request

Due to component design configuration limitations, the licensee was unable to obtain the ASME Code-required examination coverage for the components identified in table 2 above. The licensee stated that the subject welds were examined to the maximum extent practical and that the physical component configuration, interference from permanent plant equipment, and single-sided access restricted the scanning area, resulting in limited coverage. The licensee clarified that further coverage would require extensive structural modifications to the component or surrounding structure.

3.1.2.3 Proposed Alternative

The licensee stated that obtaining the required examination coverage is impractical due to physical obstructions and limitations imposed by original plant design and fabrication; therefore, no alternative examination for additional UT examination coverage is proposed.

The licensee determined that based on the volumetric coverage obtained, along with the ASME Code-required system pressure tests, it is reasonable that if significant service-induced degradation were occurring, it would have been evident by the examinations and testing that were performed.

3.1.2.4 NRC Staff Evaluation

The NRC staff evaluated Relief Request I4R-06, pursuant to 10 CFR 50.55a(g)(6)(i), to determine whether: (1) sufficient technical justification exists to support the determination that

the ASME Code requirements are impractical; (2) imposition of the Code-required examinations would result in a burden to the licensee; and (3) the licensee's proposed alternative (i.e., accepting the reduced inspection coverage in these cases, periodic system pressure tests, and VT-2 visual examinations performed during each refueling outage associated with the Class 1 leakage test) provides reasonable assurance of structural integrity and leak tightness of the subject welds. The NRC determined that if these three criteria are met, then the requirements of 10 CFR 50.55a(g)(6)(i) will also be met.

Impracticality of Compliance

The licensee stated that the design of Callaway provides access for examinations. However, component design configurations with conditions resulting in examination limitations did not allow for the full required examination volume coverage. The licensee explained that when examined, the welds listed in its submittal did not receive the required ASME Code examination coverage due to physical component configuration, interference from permanent plant equipment, and single-sided access. These conditions resulted in scanning access limitations that prohibited essentially 100 percent examination coverage (i.e., greater than 90 percent) of the required examination volumes. Where these limitations were present, the licensee performed the required examinations to the maximum extent practical. The licensee provided a summary of the examination limitations for each component for which relief was requested.

The NRC confirmed that the B-D weld configurations in the request prevented the licensee from scanning the welds from the opposite side. Additionally, as shown in the coverage plots and technical descriptions included in the licensee's submittal, the subject components have access limitations which resulted in reduced volumetric examination coverage.

Based on its review of the submittal, including the provided diagrams, the NRC staff finds that due to geometric limitations associated with the subject welds, it was impractical to meet the ASME Code-required "essentially 100 percent" volumetric examination coverage for the subject welds during the fourth 10-year ISI interval for Callaway.

Burden of Compliance

The licensee stated that for each weld in the scope of this request, conformance with the requirements is impractical as it would require extensive structural modifications to the component or surrounding structure.

The NRC staff finds that replacing, reconfiguring, or modifying the components of the subject welds in order to increase the examination coverage are the only reasonable means to achieve greater than 90 percent of the required ASME Code examination volume, and that replacement or reconfiguration of the subject components constitutes a burden on the licensee.

Structural Integrity and Leak Tightness

The NRC staff's review considered whether the licensee's achieved examination coverage for the subject welds in Examination Category B-D, Item No. B3.110, provides reasonable assurance of structural integrity and leak tightness of the subject welds. This determination was based on: (1) the examination coverage achieved and (2) the safety significance of unexamined volumes and unachievable coverage.

In evaluating the licensee's achieved examination coverage, the NRC staff assessed whether the licensee obtained as much coverage as reasonably possible and the manner in which the licensee reported the coverage achieved. From its review of the submittal, the NRC staff determined that:

- The welds were examined using the appropriate equipment, ultrasonic testing modes of propagation, probe angles, frequencies, and scanning directions to obtain maximum coverage.
- The coverage was calculated in a reasonable manner.
- The personnel and procedures utilized for the examination were qualified as required by the ASME Code, Section XI.
- The coverage was limited due to physical limitations or access.
- No unacceptable indications were identified.

The NRC staff reviewed the achieved examination coverage for the pressurizer nozzle-to-vessel welds identified in table 2 above. The examination coverage achieved for these welds was 75.65 to 77.50 percent of the required examination volume. The NRC staff reviewed the coverage plots and technical descriptions provided in the licensee's submittal and finds that the licensee demonstrated that physical and geometric limitations associated with the component configuration prevented obtaining essentially 100 percent of the ASME Code-required examination coverage for the respective components addressed by Examination Category B-D, Item No. B3.110. Additionally, the NRC staff finds that the licensee performed the ASME Code, Section XI required examinations to the maximum extent practicable.

In addition to the coverage analysis described above, the NRC staff evaluated the information provided regarding the unexamined volumes of welds and the resulting unachievable coverage. Based on its review of the submittal, the NRC staff determined that the reduced coverage was due to physical and geometric limitations associated with the component configuration. The licensee did not detect any recordable indications in the volumes examined. Therefore, based on the coverage achieved by the qualified inspection method and the examination of the subject welds to the extent possible, the staff finds it reasonable that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that the licensee performed.

Based on the aggregate coverage obtained for the subject components, the extent of the examinations, and considering the licensee's performance of essentially 100 percent coverage for the accessible portion of these welds, the NRC staff finds that the examinations performed provide reasonable assurance of the structural integrity and leak tightness of the subject B-D welds for Callaway Plant, Unit 1, and that full compliance with the ASME Code requirements for these welds would be an undue burden on the licensee.

The NRC staff also determined that, in addition to the required volumetric examinations, the subject welds have received and will continue to receive the ASME Code, Section XI, table IWB-2500-1, Examination Category B-P required system leakage test, as required for all pressure-retaining components. Despite reduced coverage of the required examination volume

of the subject welds, the NRC staff finds that this system leakage test will provide additional assurance that any degradation, if it were to occur, would be detected.

4.0 ENVIRONMENTAL CONSIDERATION

This is an action under 10 CFR 50.55a. The NRC staff has determined that a categorical exclusion applies and that special circumstances under 10 CFR 51.22, "Categorical exclusions," are not present that would preclude reliance on the categorical exclusion. Accordingly, this action meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(a)(16). Pursuant to 10 CFR 51.22, no environmental impact statement or environmental assessment need be prepared in connection with the action.

5.0 CONCLUSION

The NRC staff has reviewed the subject request and concludes, as set forth on the above evaluation, that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Furthermore, the NRC staff has concluded that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the subject components. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(5)(iii). Therefore, the NRC staff grants relief pursuant to 10 CFR 50.55a(g)(6)(i) for the subject limited examinations, as described in Relief Request I4R-06, for the fourth 10-year ISI interval at Callaway Plant, Unit No. 1.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Date: June 1, 2026

SUBJECT: CALLAWAY PLANT, UNIT NO. 1 – REQUEST NO. I4R-06 – REQUEST FOR RELIEF CONCERNING EXAMINATION FOR THE FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL (EPID L-2025-LLR-0095) DATED JUNE 1, 2026

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