UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

May 08, 2025

Fadi Diya, Senior Vice President
and Chief Nuclear Officer
Union Electric Company
8315 County Road 459
Steedman, MO 65077

SUBJECT: CALLAWAY PLANT – INTEGRATED INSPECTION REPORT 05000483/2025001

Dear Fadi Diya:

On March 31, 2025, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Callaway Plant. On April 10, 2025, the NRC inspectors discussed the results of this inspection with K. Scott, Nuclear Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

Three findings of very low safety significance (Green) are documented in this report. All of these findings involved violations of NRC requirements. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC Resident Inspector at the Callaway Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC Resident Inspector at the Callaway Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Signed by Agrawal, Ami
on 05/08/25

Ami N. Agrawal, Chief
Reactor Projects Branch B
Division of Operating Reactor Safety

Docket No. 05000483
License No. NPF-30

Enclosure:
As stated

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DATED MAY 08, 2025

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ADAMS ACCESSION NUMBER: **ML25125A071**

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000483
License Number:	NPF-30
Report Number:	05000483/2025001
Enterprise Identifier:	I-2025-001-0008
Licensee:	Union Electric Company
Facility:	Callaway Plant
Location:	Steedman, MO
Inspection Dates:	January 1 to March 31, 2025
Inspectors:	N. Brown, Resident Inspector S. Schwind, Senior Resident Inspector
Approved By:	Ami N. Agrawal, Chief Reactor Projects Branch B Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at the Callaway Plant, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Failure to Implement ASME Code Requirements for a Failed Surveillance on the Reactor Coolant System Loop 3 Safety Injection Accumulator Check Valve			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2025001-01 Open/Closed	[H.5] - Work Management	71111.15
The inspectors reviewed a self-revealed Green finding and associated non-cited violation of 10 CFR 50.55a, "Codes and Standards," for the licensee's failure to follow corrective action requirements for a failed local leak rate test. Specifically, when the reactor coolant system loop 3 safety injection accumulator check valve failed its local leak rate testing in refueling outage 25, the licensee failed to implement actions to repair or replace the valve as required by ASME Section XI ISTC-3630.			

Failure to Identify and Correct a Significant Condition Adverse to Quality Caused by Water Hammer Events in the Emergency Core Cooling System			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2025001-02 Open/Closed	[H.5] - Work Management	71152A
The inspectors reviewed a self-revealed Green finding and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a significant condition adverse to quality. Specifically, during refueling outage 25, the licensee discharged emergency core cooling system accumulator C into voided residual heat removal piping on two occasions causing water hammer events that damaged the reactor coolant system loop 3 cold leg safety injection accumulator check valve and did not identify or correct the condition.			

Failure to Provide Adequate Work Instructions for Performing Maintenance on the Reactor Coolant System Loop 3 Safety Injection Accumulator Check Valve			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2025001-03 Open/Closed	[H.5] - Work Management	71153
The inspectors reviewed a self-revealed Green finding and associated non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to have an adequate maintenance procedure as required by Regulatory Guide 1.33, "Quality Assurance Program Requirements,"			

Revision 2, February 1978. Regulatory Guide 1.33, Appendix A, Section 9, “Procedures for Performing Maintenance,” requires, in part, that maintenance should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate with the circumstances. Specifically, licensee work instructions did not adequately provide the level of detail required to ensure mechanical agitation was performed on the reactor coolant system loop 3 safety injection accumulator check valve BB8948C in accordance with Westinghouse guidance during refueling outages 25 and 26.

Additional Tracking Items

None.

PLANT STATUS

The Callaway plant began the inspection period at rated thermal power. On March 28, 2025, reactor power was reduced and the plant was taken off line on March 29 for refueling outage 27. The plant was shut down for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed activities described in IMC 2515, Appendix D, "Plant Status," observed risk significant activities, and completed on-site portions of IPs. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe weather prior to impending thunderstorms on March 4, 2025.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) component cooling water train B on January 17, 2025
(2) safety injection train B following pump testing on January 22, 2025
(3) safety injection train A pump on February 21, 2025
(4) essential service water train A following restoration for planned maintenance on March 10, 2025

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

(1) residual heat removal train A rooms, fire zones A-2, elevation 1967'-0" on January 15, 2025
(2) auxiliary building, fire zone A-1, elevation 1974'-0" on January 16, 2025
(3) motor generator set room, fire zone A-27, elevation 2026'-0" on January 22, 2025
(4) engineered safety features switchgear train A and B rooms on February 6, 2025
(5) engineered safety features train A switchgear room, fire area C-9 on February 25, 2025

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the onsite fire brigade training and performance during unannounced fire brigade drill 25-2 on February 16, 2025.

71111.06 - Flood Protection Measures

Flooding Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated internal flooding mitigation protections in engineered safety features switchgear train A and B rooms on February 6, 2025.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed and evaluated licensed operator performance in the control room during the train A residual heat removal pump and valve stroke time testing and power operated relief valve block valve position indication testing on February 13, 2025.

The inspectors also observed and evaluated licensed operator performance in the control room while shutting down the plant for a refueling outage on March 28, 2025.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

(1) The inspectors observed and evaluated the loss of heat sink with emergency action level determination on February 20, 2025.

71111.12 - Maintenance Effectiveness

Aging Management (IP Section 03.03) (1 Sample)

The inspectors evaluated the effectiveness of the aging management program for the following structures, systems and components that did not meet their inspection or test acceptance criteria:

(1) pinhole leak identified on essential service water train B on March 12, 2025

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

(1) risk management actions associated with a risk informed completion time LCO entry for planned maintenance on essential service water train A on March 3, 2025
(2) risk management actions associated with an emergent LCO entry to repair a through wall leak on essential service water train B on March 12, 2025

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

(1) containment building air exhaust plenum gaseous activity detector GT-RE-0021B on January 22, 2025
(2) containment spray train B suction valve BNHV0003 on February 14, 2025
(3) essential service water system leakage from valve EFV0371, cooling water from CKA01B return header isolation; and valve EFV0372, cooling water from CKA01B return header isolation on February 28, 2025
(4) high differential pressure across moisture separator GKD0078 on March 6, 2025
(5) failure of the power supply for train A of load shedding and emergency load sequencing, channel 2 on March 18, 2025

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

(1) valve BBHV8157B controller replacement on January 28, 2025

(2) essential service water system train A pipe replacement on March 5, 2025

71111.24 - Testing and Maintenance of Equipment Important to Risk

The inspectors evaluated the following testing and maintenance activities to verify system operability and/or functionality:

Post-Maintenance Testing (PMT) (IP Section 03.01) (4 Samples)

(1) essential service water train B cross tie valves for essential service water train A breaker replacement on January 27, 2025
(2) essential service water train B pipe replacement on March 13, 2025
(3) replacement of the power supply for load shedding and emergency load sequencing train A, channel 2 on March 18, 2025
(4) post-maintenance testing following maintenance on auxiliary feedwater valves ALHV0032 and ALHV0033 on March 20, 2025

Surveillance Testing (IP Section 03.01) (4 Samples)

(1) centrifugal charging pump A on January 8, 2025
(2) motor-driven auxiliary feedwater pump A on January 14, 2025
(3) emergency diesel generator B hot restart test on February 24, 2025
(4) motor-driven auxiliary feedwater train B valve inservice testing on February 26, 2025

Inservice Testing (IST) (IP Section 03.01) (1 Sample)

(1) component cooling water train A pump and valve inservice test on February 5, 2025

Reactor Coolant System Leakage Detection Testing (IP Section 03.01) (1 Sample)

(1) unidentified leakage greater than three standard deviations above the mean on March 20, 2025

71114.06 - Drill Evaluation

Additional Drill and/or Training Evolution (1 Sample)

The inspectors evaluated:

(1) 2025 ERO Training Drill, January 9 through February 13, 2025

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS06: Emergency AC Power Systems (IP Section 02.05) (1 Sample)

(1) January 2024 through December 2024

MS10: Cooling Water Support Systems (IP Section 02.09) (1 Sample)

(1) January 2024 through December 2024

BI01: Reactor Coolant System Specific Activity Sample (IP Section 02.10) (1 Sample)

(1) January 2024 through December 2024

BI02: Reactor Coolant System Leak Rate Sample (IP Section 02.11) (1 Sample)

(1) January 2024 through December 2024

INSPECTION RESULTS

<table>
<tr><td colspan="4">Failure to Implement ASME Code Requirements for a Failed Surveillance on the Reactor Coolant System Loop 3 Safety Injection Accumulator Check Valve</td></tr>
<tr><td>Cornerstone</td><td>Significance</td><td>Cross-Cutting Aspect</td><td>Report Section</td></tr>
<tr><td>Barrier Integrity</td><td>Green
NCV 05000483/2025001-01
Open/Closed</td><td>[H.5] - Work Management</td><td>71111.15</td></tr>
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<tr><td colspan="4">Description: The emergency core cooling system (ECCS) is designed to cool the core and provide shutdown capability in the event of a design basis accident that results in loss of reactor coolant system (RCS) inventory. There are three phases to the system based on pressure and each phase is accomplished by a dedicated portion of the ECCS. These portions of the system all have a common discharge header to each loop cold leg. A check valve is installed at the interface between the ECCS and RCS to act as a pressure isolation boundary for the RCS during normal operation, and to prevent backflow during ECCS actuation. For loop 3 the cold leg safety injection accumulator check valve is BB8948C.

In July 2019, during operating cycle 24, operators noticed a rising level in safety injection accumulator C. The licensee determined that the most likely cause of the rising level was in-leakage past check valve BB8948C and the accumulator check valve. Both of these check valves were repaired during refueling outage 25. On May 26, 2022, while starting up from the outage, operators performed surveillance procedure OSP-BB-VL-006, “RCS Pressure Isolation Valves Inservice Tests-IPTE,” to verify RCS boundary valve leakage was within the technical specification (TS) limits prior to mode change. During this surveillance, valve BB8948C failed to meet its established leak rate criteria. The licensee entered TS 3.4.14, “RCS Pressure Isolation Valve (PIV) Leakage,” Condition A, and generated condition report (CR) 202203677 to document the failed surveillance. On May 27, 2022, the licensee contacted Westinghouse to discuss possible solutions to get the check valve to seat properly. Mechanical agitation of the valve was discussed with Westinghouse providing instructions that if this method were pursued the valve should only be hit on the valve body and no marring was to be left behind. The licensee mechanically agitated the valve per job 18003484.505 until flow sound past the check valve stopped. Subsequent performance of procedure OSP-BB-VL006 verified valve BB8948C met its surveillance leakage rate and the plant continued with startup.</td></tr>
</table>

ASME OM Code 2004 Edition to 2006 Addenda, “Guidelines for Inservice Testing at Nuclear Power Plants,” ITSC-3600, “Leakage Rates for Other than Containment Isolation Valves,” paragraph (f), “Corrective Action,” states, “Valves or valve combinations with leakage rates exceeding the values specified by the Owner shall be declared inoperable and either repaired or replaced.”

Corrective Actions: The licensee investigated the cause of the failed surveillance and replaced the valve internals.

Corrective Action References: Condition Report 202308832.

Performance Assessment:

Performance Deficiency: The failure to meet the requirements for a failed check valve surveillance in accordance with AMSE Section XI was a performance deficiency. Specifically, the licensee did not initiate repair or replacement of reactor coolant system loop 3 safety injection accumulator check valve BB8948C during refueling outage 25 after the check valve failed its local leak rate test.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the RCS Equipment and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” The finding was determined to be of very low safety significance (Green) because it did not involve potential non-compliance with regulatory requirements for protection of the reactor pressure vessel against fracture.

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities.

Enforcement:

Violation: Title 10 of the *Code of Federal Regulations* 50.55a (f)(4) states, “Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the in-service test requirements set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in paragraphs (f)(2) and (3) of this section and that are incorporated by reference in paragraph (a)(1)(iv) of this section, to the extent practical within the limitations of design, geometry, and materials of construction of the components."

The ASME OM Code 2004, 2006 Addenda, Section ISTC-3630(f) "Corrective Action," states, "Valves or valve combinations with leakage rates exceeding the values specified by the Owner per ISTC-3630(e) shall be declared inoperable and either repaired or replaced.”

Contrary to the above, during refueling outage 25, the licensee failed to meet the in-service test requirements set forth in ASME OM Code and addenda. Specifically, the licensee failed to either repair or replace check valve BB8948C after the valve failed its local leak rate test.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Identify and Correct a Significant Condition Adverse to Quality Caused by Water Hammer Events in the Emergency Core Cooling System			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2025001-02 Open/Closed	[H.5] - Work Management	71152A

The inspectors reviewed a self-revealed Green finding and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a significant condition adverse to quality. Specifically, during refueling outage 25, the licensee discharged emergency core cooling system accumulator C into voided residual heat removal piping on two occasions causing water hammer events that damaged the reactor coolant system loop 3 cold leg safety injection accumulator check valve and did not identify or correct the condition.

Description: The emergency core cooling system (ECCS) is designed to cool the core and provide shutdown capability in the event of a design basis accident that results in loss of reactor coolant system (RCS) inventory. There are three phases to the system based on pressure and each phase is accomplished by a dedicated portion of the ECCS. These portions of the system all have a common discharge header to each loop cold leg. A check valve is installed at the interface between the ECCS and RCS to act as a pressure isolation boundary for the RCS during normal operation, and to prevent backflow during ECCS actuation. For loop 3 the cold leg safety injection accumulator check valve is BB8948C.

In July 2019, during operating cycle 24, operators noticed a rising level in safety injection accumulator C. The licensee determined that the most likely cause of the rising level was in-leakage past check valve BB8948C and the accumulator check valve. Both of these check valves were repaired during refueling outage 25. On May 26, 2022, while starting up from the outage, operators performed surveillance procedure OSP-BB-VL-006, “RCS Pressure Isolation Valves Inservice Tests-IPTE,” to verify RCS boundary valve leakage was within the technical specification (TS) limits prior to mode change. During this surveillance, valve BB8948C failed to meet its established leak rate criteria. The licensee entered TS 3.4.14, “RCS Pressure Isolation Valve (PIV) Leakage,” Condition A, and generated condition report (CR) 202203677 to document the failed surveillance. On May 27, 2022, the licensee contacted Westinghouse to discuss possible solutions to get the check valve to seat properly. Mechanical agitation of the valve was discussed with Westinghouse providing instructions that if this method were pursued the valve should only be hit on the valve body and no marring was to be left behind. The licensee mechanically agitated the valve per job 1800.3484.505 until flow sound past the check valve stopped. Subsequent performance of procedure OSP-BB-VL006 verified valve BB8948C met its surveillance leakage rate and the plant continued with startup.

On October 25, 2023, during startup from refueling outage 26, valve BB8948C failed to meet its local leak rate during performance of procedure OSP-BB-VL006. The licensee declared the check valve inoperable, entered TS 3.4.14, Condition A, and initiated CR 202307958 to document the failed surveillance.

Between October 26, 2023, and October 28, 2023, the licensee made multiple attempts to seat the check valve by system manipulations to flush potential foreign material from the valve seat and mechanical agitation. These efforts were unsuccessful in reducing the leakage through the check valve. The decision to mechanically agitate the check valve was based on guidance received from Westinghouse for a similar excessive leakage condition experienced by valve BB8948C the previous refueling outage. During these efforts, minor external leakage was noted at the top closure connection (bonnet) of the valve while a small amount of dry boric acid was observed on the valve body. Steam was observed intermittently coming from the body-to-bonnet gasket sealing area after mechanical agitation. On October 28, 2023, the licensee determined that valve BB8948C required an internal inspection/repair and began cooldown to Mode 5.

On November 1, 2023, the licensee performed job 23004060.531 to inspect the check valve internals and found that the disc arm was bent, causing the disc to be out of parallel with the seat. Inspection of the disc and seating surface showed evidence of atypical disc-to-seat contact and a witness mark on the disc from contacting the valve body when opening. These conditions were documented by the licensee in CR 202308204. The valve internals were then replaced under job 23004060.530. Valve BB8948C's leakage during the subsequent performance of procedure OSP-BB-VL006 on November 5, 2023, was satisfactory and the licensee continued with startup efforts.

Due to a similar condition experienced during refueling outage 25, the licensee performed root cause analysis to determine the cause why valve BB8948C was returned to service following refueling outage 25 without fully evaluating and correcting the cause of the leakage. The license determined that on May 9, 2022, during refueling outage 25, while operators were performing a post-maintenance test of valve BB8948C, 64 percent of accumulator C was discharged into voided loop 3 ECCS piping and past valve BB8948C. The following day, on May 10, 2022, accumulator C was again discharged as an attempt to lower the level in the accumulator. During this evolution, breaker NC01BGF2, for accumulator outlet isolation valve BB8808C, tripped. This resulted in an uncontrolled accumulator discharge into the partially voided loop 3 ECCS piping and past valve BB8948C.

The licensee determined that these events caused a significant water hammer and the damage to the valve disc observed during refueling outage 26 was caused by these discharges. It was determined that the mid-loop master workers protection assurance (the tagout system at Callaway) was cleared prior to filling and venting loop safety injection accumulator C piping because residual heat removal pump B was out of service at the time. The workers protection assurance work instructions directed the filling of residual heat removal B piping, but operations did not have a tracking mechanism in place to ensure the station was aware that this section of piping did not get filled. This resulted in the operators believing they met the initial conditions for performance of the post-maintenance test on valve BB8948C and the two water hammer events.

Corrective Actions: The inspectors considered this to be a significant condition adverse to quality. The licensee independently determined the need to conduct a root cause investigation and ultimately replaced the check valve internals.

Corrective Action References: Condition Reports 202203677, 20237958, 202308204, 202308855, and 202308832.

Performance Assessment:

Performance Deficiency: The failure to identify and correct a significant condition adverse to quality on the reactor coolant system loop 3 cold leg safety injection accumulator check valve was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the RCS Equipment and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to identify and correct a significant condition adverse to quality associated with the reactor coolant system loop 3 cold leg safety injection accumulator check valve led to the damaged check valve being relied upon as an RCS pressure boundary.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined the finding impacted barrier integrity and used exhibit 3 to evaluate the condition. The finding was determined to be of very low safety significance (Green) because it did not involve potential non-compliance with regulatory requirements for protection of the reactor pressure vessel against fracture.

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities.

Enforcement:

Violation: Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion XV1, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, from May 9, 2022, to November 1, 2023, the licensee failed to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances were promptly identified and corrected. Specifically, the licensee failed to identify and correct the damage to the reactor coolant system loop 3 safety injection accumulator check valve.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Provide Adequate Work Instructions for Performing Maintenance on the Reactor Coolant System Loop 3 Safety Injection Accumulator Check Valve			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2025001-03 Open/Closed	[H.5] - Work Management	71153

The inspectors reviewed a self-revealed Green finding and associated non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to have an adequate maintenance procedure as required by Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance," requires, in part, that maintenance should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate with the circumstances. Specifically, licensee work instructions did not adequately provide the level of detail required to ensure mechanical agitation was performed on reactor coolant system loop 3 safety injection accumulator check valve BB8948C in accordance with Westinghouse guidance during refueling outages 25 and 26.

Description: The emergency core cooling system (ECCS) is designed to cool the core and provide shutdown capability in the event of a design basis accident that results in loss of reactor coolant system (RCS) inventory. There are three phases to the system based on pressure and each phase is accomplished by a dedicated portion of the ECCS. These portions of the system all have a common discharge header to each loop cold leg. A check valve is installed at the interface between the ECCS and RCS to act as a pressure isolation boundary for the RCS during normal operation, and to prevent backflow during ECCS actuation. For loop 3 the cold leg safety injection accumulator check valve is BB8948C.

In July 2019, during operating cycle 24, operators noticed a rising level in safety injection accumulator C. The licensee determined that the most likely cause of the rising level was in-leakage past check valve BB8948C and the accumulator check valve. Both of these check valves were repaired during refueling outage 25. On May 26, 2022, while starting up from the outage, operators performed surveillance procedure OSP-BB-VL-006, "RCS Pressure Isolation Valves Inservice Tests-IPTE," to verify RCS boundary valve leakage was within the technical specification (TS) limits prior to mode change. During this surveillance, valve BB8948C failed to meet its established leak rate criteria. The licensee entered TS 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," Condition A, and generated condition report (CR) 202203677 to document the failed surveillance. On May 27, 2022, the licensee contacted Westinghouse to discuss possible solutions to get the check valve to seat properly. Mechanical agitation of the valve was discussed with Westinghouse providing instructions that if this method were pursued the valve should only be hit on the valve body and no marring was to be left behind. The licensee mechanically agitated the valve per job 18003484.505 until flow sound past the check valve stopped. Subsequent performance of procedure OSP-BB-VL006 verified valve BB8948C met its surveillance leakage rate and the plant continued with startup.

On October 25, 2023, during startup from refuel outage 26, valve BB8948C failed to meet its local leak rate during performance of licensee procedure OSP-BB-VL006. The licensee declared the check valve inoperable, entered TS 3.4.14 Condition A, and initiated CR 202307958 to document the failed surveillance.

Between October 26 and 28, 2023, the licensee made multiple attempts to seat the check valve by system manipulations to flush potential foreign material from the valve seat while performing mechanical agitation per Job 23004060. These efforts were unsuccessful in reducing the leakage through the check valve. The decision to mechanically agitate the check valve was based on guidance received from Westinghouse for a similar excessive leakage condition experienced by valve BB8948C during refueling outage 25.

During these efforts minor external leakage was noted at the top closure connection (bonnet) of the valve while a small amount of dry boric acid was observed on the valve body. Steam was observed intermittently coming from the body-to-bonnet gasket sealing area after mechanical agitation. The licensee determined that Westinghouse guidance had not been followed while mechanically agitating the check valve as evident by visible marring on the valve body and bonnet. Job 23004060, Step 5.2 states “in a controlled manner, mechanically agitate check valve to help it seat properly.” Because sufficiently detailed work instructions did not exist, workers did not follow vendor guidance and damaged the check valve.

Corrective Actions: The licensee performed surface grinding of the check valve during refueling outage 27 to eliminate indentations. Subsequent ultrasonic testing indicated that minimum wall thickness was maintained.

Corrective Action References: Condition Reports 202203677, 202307958, 202308108, and 202308035.

Performance Assessment:

Performance Deficiency: The failure to provide adequate work instructions for performing maintenance on the reactor coolant system loop 3 safety injection accumulator check valve was a performance deficiency.

Screening: The inspectors determined that the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical barriers protect public from radionuclide releases caused by accidents or events. Specifically, work instructions did not provide the level of detail necessary to prevent damaging the check valve during mechanical agitation.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix G, Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings.” The inspectors determined the finding impacted barrier integrity and used exhibit 4 to evaluate the condition. The finding was determined to be of very low safety significance (Green) because it (1) did not involve the reactor pressure vessel, (2) did not involve the fuel bundle movement, (3) did not involve the low temperature over pressure protection, (4) did not involve freeze seals, (5) did not involve steam generator nozzle dams, (6.a) was not associated with criticality, and (7) did not degrade the ability to isolate a drain down or leakage path.

Cross-cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities.

Enforcement:

Violation: Technical Specification 5.4.1.a, Procedures, states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures listed in Regulatory Guide 1.33, “Quality Assurance Program Requirements,” Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Revision 2, Appendix A, Section 9, “Procedures for Performing Maintenance,” requires, in part, that maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. The licensee established work instructions, job 19003484, “Correct seat leakage on check valve BB8948C,” and job 23004060, “Investigate RCS check valve BB8948C failing to seat during OSP-BB-VL006,” in part, to meet this requirement.

Contrary to the above, the licensee failed to establish, implement, and maintain the maintenance procedure for the reactor coolant system loop 3 safety injection accumulator check valve. Specifically, maintenance procedures, work instructions job 19003484 and job 23004060, that can affect safety-related equipment, failed to include adequate instructions for the mechanical agitation of the reactor coolant system loop 3 safety injection accumulator check valve. As a result, the check valve body and bonnet were damaged.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On April 10, 2025, the inspectors presented the integrated inspection results to K. Scott, Nuclear Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	OTO-ZZ-00012	Severe Weather	44
71111.04	Procedures	OSP-EG-0001B	Component Cooling Water Train B Valve Alignment Surveillance	3
		OSP-EM-P001B, Checklist 1	Safety Injection Train B Inservice Test - Group B	31
		OTN-EF-00001, Checklist 3	Normal Valve Lineup Essential Service Water Pump House, Train A	32
		OTN-EM-00001, Checklist 2	Safety Injection System, Checklist 2, Safety Injection System Outside Containment Valve Lineup	26
71111.05	Corrective Action Documents	Condition Reports	202500766, 202500869	
	Miscellaneous		Fire Preplan Manual	43
		T210.001	Drill Number 25-2	
71111.06	Miscellaneous	M-FL-08	Determine Flood Levels in Control Building Rooms 3401, 3406, 3301, 3302, 3403, 3404, 3405, 3407, 3408, 3409, 3410, 3411, 3412, 3414, 3415, 3416, and 3605	6
71111.11Q	Miscellaneous		Simulator Training Scenario Guide, LOCT Scenario 25-1	
	Procedures	OSP-EJ-V001A	Train A RHR Valve Inservice Test	23
		OTG-ZZ-00005	Plant Shutdown 20% Power to Hot Standby	55
		OTN-EG-00001, Addendum 2	Supplying CCW to Idle Train Safety Loads	9
	Work Orders	Jobs	23513079, 23501954, 23508005, 23508904, 24512021, 24512162	
71111.12	Procedures	EDP-ZZ-01121	Raw Water Systems Predictive Performance Program	27
71111.13	Miscellaneous	RICT-2025-01	Projection Details	
		RICT-2025-01	PRA Availability Determination	
		RICT-2025-02	Projection Details	
		RICT-2025-02	PRA Availability Determination	
		APA-ZZ-00315, Appendix C	Risk Management Actions	7
	Work Orders	Jobs	24000027, 25000854	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.15	Corrective Action Documents	Condition Reports	202407739, 202403690, 202500290, 201907309, 202500940, 202501971, 202500993, 202501349	
	Miscellaneous		Essential Service Water Total System Leakage Calculation dated February 26, 2025	
	Procedures	KDP-ZZ-00013	Emergency Response Facility and Equipment Evaluation	22
		KDP-ZZ-00013, Appendix 1	Equipment Important to Emergency Response Matrix	14
		OSP-GK-0001A	A Train Control Room Filtration and Pressurization System Monthly Operability Verification	19
	Work Orders	Jobs	24004070	
71111.18	Miscellaneous	BB-5069-SCD	Reactor Coolant System Categorization Document	2
		MP 23-0045	A Pumphouse Large Bore ESW Pipe Replacement	1
		Request for Resolution 240255	10 CFR 50.69 Alternative Treatment Requirements (ATR) Form	1/16/2025
71111.24	Corrective Action Documents	Condition Reports	202501349, 202501417	
	Drawings	M-22EG01	Piping and Instrumentation Diagram for Component Cooling Water System	11
		M-22EG02	Piping and Instrumentation Diagram for Component Cooling Water System	26
		APA-ZZ-00322, Appendix E	Post-Maintenance Test Program	21
		APA-ZZ-00356	Pump and Valve Inservice Test Program	30
		ISL-NF-NB01B	NB01Degraded & UV LSELS Chan II	30
		ITM-ZZ-00024	NF039A Power Supply Voltage Measurement	30
		OPD-ZZ-00029	RCS Leakage Action Levels Guideline	8
		OSP-AL-P0001A	Motor Driven Auxiliary Feedwater Pump A Inservice Test - Group A	69
		OSP-AL-V001B	Train B Auxiliary Feedwater Valve Inservice Test	63
		OSP-AL-V001C	Turbine Driven Auxiliary Feedwater Valve Inservice Test	65
		OSP-BB-00009	RCS Inventory Balance	44
		OSP-BG-P005A	Centrifugal Charging Pump A Inservice Test - Group B	57
		OSP-EF-V001A	ESW Train A Operability	55

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		OSP-EG-P01AC	CCW Train A Pump and Valve Inservice Test	35
		OSP-NE-0024B	Standby Diesel Generator B 24 Hour Run and Hot Restart Test	63
		QCP-ZZ-05041	Visual Examination to ASME VT-2	32
	Work Orders	Jobs	24510934, 24511063, 19509453, 19509516, 25000854, 25001011	
71114.06	Corrective Action Documents	Condition Reports	202500239, 202500241	
	Procedures	EIP-ZZ-00101	Classification of Emergencies	57
		EIP-ZZ-00101, Addendum 2	Emergency Action Level Technical Bases Document	22
	Miscellaneous		Emergency AC Power Systems Performance Indicator Date for January 2024 through December 2024	
			Cooling Water Systems Performance Indicator Data for January 2024 through December 2024	
			RCS Chemistry Analyses for January 2024 through December 2024	
			RCS Leakrate Calculation Results for January 2024 through December 2024	
	Procedures	OSP-EG-P01AC	CCW Train A Pump and Valve Inservice Test	35