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

October 17, 2022

Mr. Fadi Diya
Senior Vice President
and Chief Nuclear Officer
Ameren Missouri
8315 County Road 459
Steedman, MO 65077

SUBJECT: CALLAWAY PLANT – INTEGRATED INSPECTION REPORT 05000483/2022003

Dear Mr. Diya:

On September 30, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Callaway Plant. On October 5, 2022, the NRC inspectors discussed the results of this inspection with Mr. Barry Cox, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

Two findings of very low safety significance (Green) are documented in this report. Two 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 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 Werner, Gregory
on 10/17/22

Gregory E. Werner, Chief
Projects Branch B
Division of Operating Reactor Safety

Docket No. 05000483
License No. NPF-30

Enclosure:
As stated

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000483
License Number:	NPF-30
Report Number:	05000483/2022003
Enterprise Identifier:	I-2022-003-0000
Licensee:	Ameren Missouri
Facility:	Callaway Plant
Location:	Steedman, Missouri
Inspection Dates:	July 1 to September 30, 2022
Inspectors:	D. Proulx, Senior Project Engineer S. Schwind, Resident Inspector J. Vera, Acting Senior Resident Inspector K. Clayton, Senior Operations Engineer
Approved By:	Gregory E. Werner, Chief 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 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 Identify and Correct Cracked Welds and Improperly Torqued Bolts on Emergency Diesel Generator Exhaust Silencers			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022003-01 Open/Closed	None	71111.15
The inspectors reviewed a self-revealed Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," associated with the licensee's failure to promptly identify and correct conditions adverse to quality on both trains of emergency diesel generators. On June 28 and 29, 2022, the licensee identified significant cracks in the welds and improperly torqued silencer support bolts on the emergency diesel generator A exhaust silencer and its support brackets. Similar cracks were also found on the emergency diesel generator B exhaust silencer supports. These are seismically qualified, safety-related components in the diesel generator system. The licensee was made aware of similar weld failures, caused by improperly torqued silencer bolts at Wolf Creek in 2010 but failed to adequately evaluate the operating experience report which could have led to earlier detection or prevention of the weld failures. In addition, while investigating damage to the exhaust silencer insulation on April 23, 2022, the licensee documented a concern with possible damage to the exhaust system in a condition report but took no immediate action to investigate or correct the condition.			

Failure to Follow Procedure for Filling and Venting the B Train of Containment Spray			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2022003-02 Open/Closed	[H.12] - Avoid Complacency	71153
The inspectors reviewed a self-revealed Green non-cited violation of Technical Specification 5.4.1.a, when the licensee failed to follow steps in procedure OTN-EN-00001, "Containment Spray System," revision 25. Specifically, on May 11, 2022, the licensee failed to close and lock valve ENV0127, containment spray pump B recirculation throttle valve, in accordance with step 5.10.19 following a fill and vent of the system. Containment spray was not required to be operable at the time as the plant was in mode 5 (cold shutdown). Valve ENV0127 was left locked open until the error was discovered during a failed surveillance test of the pump on June 21, 2022.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000483/2022002-00	LER 2022-002-00 for Callaway Plant, Unit 1, Containment Spray Recirculation Valve Out of Position Resulted in Condition Prohibited by Technical Specifications and Condition Which Could Have Prevented Fulfillment of a Safety Function	71153	Closed

PLANT STATUS

Callaway began the inspection period at rated thermal power and remained at or near rated thermal power for the entire 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

External Flooding Sample (IP Section 03.03) (1 Sample)

(1) The inspectors evaluated that flood protection barriers, mitigation plans, procedures, and equipment are consistent with the licensee's design requirements and risk analysis assumptions for coping with external flooding on July 29, 2022.

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) emergency diesel generator B fuel oil system on July 18, 2022
(2) turbine-driven auxiliary feedwater pump suction flow paths on July 19, 2022
(3) safety injection train A on September 26, 2022
(4) essential service water B on September 30, 2022

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated system configurations during a complete walkdown of train A of the essential service water system on July 28, 2022.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (7 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) auxiliary building, fire area A-11, on July 10, 2022
(2) auxiliary building, fire area A-12, on July 10, 2022
(3) auxiliary building, fire area A-8, on July 11, 2022
(4) auxiliary building, fire area A-2, on July 20, 2022
(5) auxiliary building, fire area A-26, on August 1, 2022
(6) auxiliary building, fire area A-15, on August 1, 2022
(7) main control room, fire area C-27, on September 21, 2022

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

(1) train B emergency core cooling system pump rooms

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

Requalification Examination Results (IP Section 03.03) (1 Sample)

(1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exams administered from July 25 through August 29, 2022.

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 turbine control valve testing on August 6 and turbine-driven auxiliary feedwater pump inservice testing on August 8, 2022.

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

(1) The inspectors observed and evaluated an as-found crew evaluation scenario on September 12, 2022.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components remain capable of performing their intended function:

(1) excess letdown isolation valve failures on April 9, 2021, September 23, 2021, and March 4, 2022
(2) steam generator A main steam dump to atmosphere radiation monitor failure on August 24, 2022

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 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) elevated risk due to maintenance of the non-safety auxiliary feedwater pump lasting more than 72 hours, on August 4, 2022
(2) troubleshooting activities on the digital feedwater control system on September 7, 2022
(3) elevated risk associated with planned maintenance on emergency diesel generator B on September 13, 2022
(4) modification of transformer XPG105 and XPG133 during heightened distribution system awareness on September 19, 2022
(5) elevated risk due to planned maintenance on essential service water A self-cleaning strainer differential pressure transmitter on September 28, 2022

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

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

(1) containment cooler C regarding 10 CFR Part 21 report of incorrect thread length on locknuts
(2) valve EGHV0070B, component cooling water to radioactive waste isolation valve, closure stroke time step change
(3) containment spray train B failed surveillance test due to misalignment of valve ENV0127, the containment spray pump B recirculation throttle valve
(4) emergency diesel generators A and B exhaust silencer support weld cracks

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) digital feedwater system valve positioners on main feedwater regulating valves and main feedwater bypass valves
(2) ultimate heat sink cooling tower fan relay replacement

71111.19 – Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (7 Samples)

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

(1) emergency diesel generator A exhaust silencer weld repairs on July 7, 2022
(2) functional test of inverter NK14 following cleaning and inspection on July 6, 2022
(3) emergency diesel generator B following inspection of the lube oil cooler and replacement of lube oil filter elements on September 14, 2022
(4) alternate emergency power supply diesel generator 1 test following a maintenance outage on August 19, 2022
(5) alternate emergency power supply diesel generator 4 test following a maintenance outage on September 2, 2022
(6) service air compressor B following corrective maintenance on August 19, 2022
(7) control room A/C SGK04 train A after refrigerant leak repair and copper tube replacement on September 30, 2022

71111.22 - Surveillance Testing

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

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

(1) essential service water pump A inservice test on August 3, 2022
(2) turbine-driven auxiliary feedwater pump inservice test on August 26, 2022
(3) main turbine stop and control valve testing on August 26, 2022
(4) portable FLEX lighting test on July 22, 2022

Inservice Testing (IP Section 03.01) (1 Sample)

(1) safety injection system B pump inservice testing, July 12, 2022

Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

(1) safety injection system B valve inservice testing, July 12, 2022

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

(1) radiological emergency response plan team turnover drill on July 14, 2022

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (1 Sample)

(1) July 1, 2021 through June 30, 2022

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (1 Sample)

(1) July 1, 2021 through June 30, 2022

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (1 Sample)

(1) July 1, 2021 through June 30, 2022

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (Section 03.03) (1 Sample)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issue:

(1) manual operator actions to cooldown the reactor using atmospheric steam dump manual handwheels following a main steam line break outside of containment (condition report 202201540)

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Followup (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated cracked welds on the supports for the emergency diesel generator exhaust silencers (A and B) and the licensee's response on July 1, 2022.

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

(1) LER 05000483/2022-002-00, "Containment Spray Recirculation Valve Out of Position Resulted in Condition Prohibited by Technical Specifications and Condition Which Could Have Prevented Fulfillment of a Safety Function" (ADAMS Accession No. ML22230C934) (Closed): The inspection conclusions associated with this LER are documented below.

INSPECTION RESULTS

Failure to Identify and Correct Cracked Welds and Improperly Torqued Bolts on Emergency Diesel Generator Exhaust Silencers			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022003-01 Open/Closed	None	71111.15

The inspectors reviewed a self-revealed Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," associated with the licensee's failure to promptly identify and correct conditions adverse to quality on both trains of emergency diesel generators (EDG). On June 28 and 29, 2022, the licensee identified significant cracks in the welds and improperly torqued silencer support bolts on the EDG A exhaust silencer and its support brackets. Similar cracks were also found on the EDG B exhaust silencer supports. These are seismically qualified, safety-related components in the diesel generator system. The licensee was made aware of similar weld failures, caused by improperly torqued silencer bolts at Wolf Creek in 2010 but failed to adequately evaluate the operating experience report which could have led to earlier detection or prevention of the weld failures. In addition, while investigating damage to the exhaust silencer insulation on April 23, 2022, the licensee documented a concern with possible damage to the exhaust system in a condition report but took no immediate action to investigate or correct the condition.

Description: On June 28, 2022, while working job 22001096 to repair the insulation on the EDG A exhaust silencer, cracks were found in some of the welds between the exhaust silencer and its supports. These cracked welds were documented in condition report 202204382. An initial operability determination concluded that EDG A was operable but degraded and recommended additional inspections.

On June 29, 2022, while further inspecting the exhaust silencer, the bolts on the east end of the support were found torqued to approximately 20 ft-lbs. The vendor manual and drawings specified that these bolts were to be installed loosely to allow movement of the support during thermal expansion of the exhaust silencer. This was documented in condition report 202204399. Further investigation revealed that these bolts had been torqued to 20 ft-lb during plant construction.

On June 30, 2022, additional cracks were found on the support welds, as well as a through-wall crack on the silencer tank with indication of an exhaust leak. The cracks were extensive to the point that the seismic qualification of the equipment could no longer be justified and EDG A was declared inoperable. Repairs to the critical welds were completed approximately 17 hours later and EDG A was declared operable. The remaining weld repairs were completed by July 7, 2022. Similar cracks were identified and repaired on EDG B on July 13, 2022.

Weld failures identical to those found at Callaway had previously been identified at Wolf Creek Generating Station in April 2010. This information was made available to the licensee and was documented in their corrective action program as CAR 201002451. The analysis provided by Wolf Creek stated that the condition was initially discovered while investigating the presence of corrosion products believed to have come from the exhaust silencer supports. However, further investigation revealed that bolts had been inappropriately torqued on the moveable end of the silencer supports which restricted thermal expansion during

operation. This caused excessive stress on the support welds and eventual weld failure. When initially evaluating this issue in 2010, the licensee stated that there was no rust present on the EDG exhaust silencer supports, therefore, the issue was not applicable. The licensee neglected to address the root cause of the issue by not verifying that the bolts on the moveable ends of their EDG silencers were loose per vendor manual instructions to allow freedom of movement during thermal expansion. This constituted a missed opportunity to identify a condition adverse to quality.

In addition to this missed opportunity, on March 16, 2022, a plant operator identified pieces of insulation on the floor below the exhaust silencer for EDG A. This was documented in condition report 202201534 and job 220001096 was created to inspect the EDG exhaust silencer. During the refueling outage, on April 23, 2022, the licensee conducted a walkdown of the exhaust silencer in support of this job and noted in condition report 202202681 that the insulation damage was “much more severe” than anticipated and that “damage to the actual DG exhaust system may be present.” The originator of the condition report recommended evaluating the actual exhaust system and adding necessary repairs to the scope of the refueling outage. However, no further inspections and no corrective actions were taken during the outage. This represented a second missed opportunity to have identified the cracked welds and the improperly torqued bolts on the moveable end of the silencer supports.

Following inspection and repair of both the EDG A and B exhaust silencers, the licensee performed finite element analyses, along with EDG room oxygen concentration estimates (the exhaust silencer and air intake are in the same room as their respective EDG) which adequately demonstrated that both EDGs always remained operable, including during postulated design basis seismic events, despite the degraded conditions on the silencer supports.

Corrective Actions: The licensee generated condition reports to document the issues identified with the EDG exhaust silencers and to drive corrective actions. As a result, all the cracked welds were repaired and the bolts on the moveable ends of the exhaust silencers were loosened in accordance with vendor recommendations. The licensee also implemented periodic inspections of the support welds and sliding bolts.

Corrective Action References: Condition Report 202204382

Performance Assessment:

Performance Deficiency: The licensee’s failure to identify a condition adverse to quality on the exhaust silencer and supports for both EDG trains was a performance deficiency. Specifically, despite multiple opportunities, the licensee failed to identify the improperly torqued silencer support bolts and the cracked welds on the silencer and supports that degraded the seismic qualification of the equipment.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the incorrect installation of the exhaust silencer bolts restricted movement of the silencer during thermal expansion and repeatedly stressed the welds until they eventually failed, adversely affecting the systems’ seismic qualification.

Significance: The inspectors assessed the significance of the finding using IMC 0609, appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” The inspectors determined that a detailed risk evaluation was necessary since the finding degraded two or more trains of a multi-train system or function and it degraded one or more trains of a system that supports a risk significant system or function. The Senior Reactor Analyst concluded that a qualitative analysis was appropriate since the licensee was able to demonstrate functionality of both EDGs during a seismic event and therefore, the incremental conditional core damage probability is less than 1.0E-07. Therefore, the finding was determined to be of very low safety significance (Green).

Cross-Cutting Aspect: None. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance. While there was a missed opportunity to identify the condition in 2022, the failure to evaluate similar operating experience in 2010 was determined to be the proximate cause of the performance deficiency.

Enforcement:

Violation: Title 10 CFR 50, Appendix B, Criterion XVI, “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, on June 29, 2022, the licensee discovered that the bolts on the moveable supports of the EDG A exhaust silencer were torqued when they were required to be loose to accommodate thermal expansion of the silencer during operation. Specifically, from April 19, 2010, until June 28, 2022, the licensee failed to promptly identify and correct the improperly torqued silencer support bolts that resulted in the cracked welds on the EDG silencer and supports, conditions adverse to quality. The licensee had multiple opportunities to identify the improperly torqued silencer support bolts and cracked welds, as early as 2010 when they were informed of similar conditions on the EDG silencers at the Wolf Creek Generating Station, and again in April 2022 when a walkdown of the EDG A silencer indicated there could have been damage underneath the insulation.

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

Observation: Manual Operator Actions in Emergency Operating Procedures	71152A

The inspectors followed up on corrective actions for condition report 202203580, “Change Process Errors – EOP [emergency operating procedures] Revisions That Credited ASD [atmospheric steam dump] Handwheels.” This was selected during a routine review of condition reports during plant status to determine if any violation of NRC requirements occurred with respect to the treatment of manual operator actions under 10 CFR 50.59, “Changes, Tests, and Experiments.”

Modification 19-0088 installed manual handwheels on all four atmospheric steam dump valves to allow manual operation of the valves during certain accident scenarios. The inspectors reviewed the affected emergency operating procedures and determined that procedure changes were appropriate, and that no violation of NRC requirements occurred.

Failure to Follow Procedure for Filling and Venting the B Train of Containment Spray			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000483/2022003-02 Open/Closed	[H.12] – Avoid Complacency	71153

The inspectors reviewed a self-revealed Green non-cited violation of Technical Specification 5.4.1.a, when the licensee failed to follow steps in procedure OTN-EN-00001, "Containment Spray System," revision 25. Specifically, on May 11, 2022, the licensee failed to close and lock valve ENV0127, containment spray pump B recirculation throttle valve, in accordance with step 5.10.19 following a fill and vent of the system. Containment spray (CS) was not required to be operable at the time as the plant was in mode 5 (cold shutdown). Valve ENV0127 was left locked open until the error was discovered during a failed surveillance test of the pump on June 21, 2022.

Description: On May 11, 2022, while the plant was in mode 5 (cold shutdown), the licensee filled and vented train B of the CS system in accordance with procedure OTN-EN-00001, "Containment Spray System," revision 25. During restoration from this evolution, step 5.10.19 required valve ENV0127, the CS pump B recirculation throttle valve, to be locked closed. However, the valve was locked open and remained in that condition until June 21, 2022.

On June 21, 2022, the licensee performed procedure OSP-EN-P001B, "Train B Containment Spray Pump Inservice Test." During the test, pump discharge pressure was measured at 225 psig which was lower than the technical specification minimum discharge pressure of 250 psig. Immediate troubleshooting identified that valve ENV0127 was open, which was likely the cause of the low discharge pressure. The pump had been declared inoperable earlier that day for test purposes and remained inoperable until the test was successfully reperformed later the same day. However, the licensee subsequently demonstrated by analysis that the CS system remained capable of performing its safety function despite the decreased discharge pressure caused by the valve being open.

Corrective Actions: The licensee generated a condition report to document the issues identified with failure to follow procedures and submitted Licensee Event Report 05000483/2022-002-00. Additionally, valve ENV0127 was locked closed as required by the procedure and the individuals involved in this error received coaching on expectations for manipulating safety-related valves.

Corrective Action References: Condition Report 202204246.

Performance Assessment:

Performance Deficiency: The licensee's failure to follow a CS system procedure is a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the human performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the improper alignment of valve ENV0127 on May 11, 2022, rendered a single train of CS inoperable for 29 days, in excess of the technical specification allowed outage time of 72 hours.

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," Exhibit 3, "Barrier Integrity Screening Questions," dated November 30, 2020. Per the "Reactor Containment," screening questions, the CS train B remained functional, so this was not a failure of containment pressure control equipment or heat removal components and since the containment does not have hydrogen igniters, the finding was determined to be of very low safety significance (Green).

Cross-Cutting Aspect: H.12 – Avoid Complacency: Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. The performer did not use peer checking when closing the valve, which could have prevented the mistake and the independent verifier was not able to physically check the valve closed due to the locking mechanism preventing valve manipulation.

Enforcement:

Violation: Technical specification 5.4.1.a, requires, in part, that written procedures shall be established, implemented, and maintained covering the activities of applicable procedures recommended in Regulatory Guide 1.33, revision 2, appendix A, February 1978. Section 3.f of appendix A requires procedures for filling and venting of containment systems. Procedure OTN-EN-00001, "Containment Spray System," revision 25 implements this requirement and provides written instructions for filling and venting the CS system, including specific steps for positioning the system valves.

Contrary to the above, on May 11, 2022, the licensee failed to follow procedure OTN-EN-00001, "Containment Spray System," revision 25, step 5.10.19 which required valve ENV0127, the CS pump B recirculation throttle valve, to be locked closed as part of the normal standby alignment. As a result, valve ENV0127 was left open, impacting the discharge pressure of train B of the CS system.

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 October 5, 2022, the inspectors presented the integrated inspection results to Mr. Barry Cox, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Miscellaneous		Final Safety Analysis Report, Section 2.4	OL-13
71111.01	Miscellaneous	8600-X-88300(Q)	Property - Grading, P.M.P. Drainage Plan, Final Grading and Drainage	
71111.01	Procedures	OTO-ZZ-00005	Flooding	3
71111.04	Corrective Action Documents	Condition Reports	200604472, 200610488, 201903189, 202004022, 202005424, 202005430, 202005848, 202006083, 202006156, 202006866, 202006887, 202103795, 202105957, 202200371, 202201415, 202203144, 202203400	
71111.04	Drawings	M-22AL01(Q)	Piping & Instrumentation Diagram Auxiliary Feedwater System	51
71111.04	Drawings	M-22EF01(Q)	Piping & Instrumentation Diagram Essential Service Water System	83
71111.04	Drawings	M-22EF02(Q)	Piping & Instrumentation Diagram Essential Service Water System	79
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71111.04	Drawings	M-22EM01(Q)	Piping & Instrumentation Diagram High Pressure Coolant Injection System	39
71111.04	Drawings	M-22EM02(Q)	Piping & Instrumentation Diagram High Pressure Coolant Injection System	23
71111.04	Drawings	M-22JE01(Q)	Piping & Instrumentation Diagram Emergency Fuel Oil System	19
71111.04	Drawings	M-U2EF01(Q)	Piping & Instrumentation Diagram Essential Service Water System	75
71111.04	Procedures	OTN-AL-00001	Auxiliary Feedwater System	38
71111.04	Procedures	OTN-EF-00001	Essential Service Water System	81
71111.04	Procedures	OTN-EM-00001, Checklist 2	Performer Review Checklist	26
71111.04	Procedures	OTN-NE-0001B	Standby Diesel Generator System - Train B	57
71111.04	Work Orders		19002110	
71111.05	Corrective Action	Condition Reports	202003897. 202003900, 202100031, 202107442,	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents		202201859, 202202093	
71111.05	Miscellaneous		Fire Preplan Manual	41
71111.05	Miscellaneous	KC-106	Fire Safety Analysis, Fire Area A-26	1
71111.05	Miscellaneous	KC-138	Fire Safety Analysis, Fire Area C-27	4
71111.05	Miscellaneous	KC-45	Detailed Fire Modeling Report, Fire Compartment A-2, Auxiliary Building Safety-Related Pump Area, Auxiliary Building, Elevation 1974'	1
71111.05	Miscellaneous	KC-82	Fire Safety Analysis, Fire Area A-2	1
71111.05	Miscellaneous	KC-88	Fire Safety Analysis, Fire Area A-8	2
71111.05	Miscellaneous	KC-91	Fire Safety Analysis. Fire Area A-11	1
71111.05	Miscellaneous	KC-92	Fire Safety Analysis, Fire Area A-12	1
71111.05	Miscellaneous	KC-95	Fire Safety Analysis, Fire Area A-15	1
71111.05	Procedures	OTO-KC-00001	Fire Response	20
71111.06	Corrective Action Documents	Condition Reports	202204157, 202204757, 202205384	
71111.06	Miscellaneous	M-FL-01	Determine Flood Levels in Auxiliary Building Room 1107, 1108, 1109, 1110, 1111, 1112, 1113, and 1114	1
71111.11Q	Procedures		Simulator Crew Evaluation Scenario for September 12, 2022	
71111.11Q	Procedures	OSP-AC-00001	Turbine Stop Valve Trip Actuating Device Test	17
71111.11Q	Procedures	OSP-AC-00003	Turbine Control Valve Stroke Test	25
71111.13	Corrective Action Documents	Condition Reports	2003458, 2003462, 202006156, 20020220585, 202205022, 202205029	
71111.13	Miscellaneous	E-2F1301	Fire Detection/Protection System - Auxiliary Building Elevation 2000'0"	10
71111.13	Procedures	ODP-ZZ-00002, Appendix 2	Risk Management Actions for Planned Risk Significant Activities	19
71111.13	Work Orders		22000018, 22003703, 21502504, 22502487, 20003458, 20003462	
71111.15	Calculations	ARC-1687	Flow Model for PEN01B to Containment Spray Header	0
71111.15	Corrective Action Documents	Condition Reports	202204382, 202204440, 202204652, 202205752, 202205886	
71111.15	Drawings	J-435-00005	Outline Drawing - Concentric Orifice Plates	16
71111.15	Miscellaneous	56085	Part 21 Report - Incorrect Thread Length on Locknuts	

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71111.15	Miscellaneous	M-225-00041	Valve Spec. Sheet, Spec. M-225, P.O. Items 2.04, 2.05 & 2.06	4
71111.15	Procedures	OSP-EN-P001B	Train B Containment Spray Pump Inservice Test	55
71111.15	Procedures	OTN-EN-00001	Containment Spray System	25
71111.15	Work Orders		22505562	
71111.18	Engineering Changes	MP 20-0018	Upgrade Digital Feedwater firmware and replace MFRV & MFBV Positioners	0
71111.18	Engineering Changes	MP 20-0018 EIN #001	Detailed information on the modifications that will be made internally to cabinet AE366	0
71111.18	Engineering Changes	MP 20-0018 EIN #002	Detailed information on the modifications that will be made internally to cabinet AE367	0
71111.18	Engineering Changes	MP 20-0018 EIN #003	Detailed information on the modifications that will be made internally to cabinet RP368	0
71111.18	Engineering Changes	MP 20-0018 EIN #004	Detailed information on the modifications that will be made internally to cabinet RP369	0
71111.19	Work Orders		22002909, 20503994, 18504668, 21502504	
71111.22	Corrective Action Documents	Condition Reports	202201527	
71111.22	Miscellaneous	OOA-XX-LITES	FLEXG-LIGHTS-1(2,3,4,5,6) Operator Aid	0
71111.22	Procedures	OSP-AC-00001	Turbine Stop Valve Trip Actuating Device Test	17
71111.22	Procedures	OSP-AL-P0002	Turbine Driven Auxiliary Feedwater Pump Inservice Test - Group B	82
71111.22	Procedures	OSP-EF-P0001A	ESW Train A Inservice Test	88
71111.22	Procedures	OSP-EM-P0001B	Safety Injection System B IST	52
71111.22	Procedures	OSP-EM-V0001B	Safety Injection System B IST	35
71111.22	Work Orders		20505256, 20505684, 22508266, 22506401, 22501950	
71114.06	Corrective Action Documents	Condition Reports	202105024, 202201527	
71114.06	Miscellaneous		Radiological Emergency Response Plan Team Turnover Drill, July 14, 2022, Scenario	
71114.06	Procedures	EIP-ZZ-00101	Classification of Emergencies	30
71114.06	Procedures	EIP-ZZ-00240	Technical Support Center Operations	30
71151	Corrective Action Documents	Condition Reports	202200154	

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71151	Miscellaneous		Plant Process Computer Data for Excore Nuclear Instrument Channels 1-4	07/01/21-06/30/22
71151	Miscellaneous		Control Room Narrative Logs	07/01/21-06/30/22