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

October 12, 2022

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

SUBJECT: CALLAWAY PLANT – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000483/2022010

Dear Mr. Diya:

On September 1, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Callaway Plant and discussed the results of this inspection with Mr. B. Cox, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's problem identification and resolution program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for problem identification and resolution programs. The team identified a finding associated with problem identification and a finding associated with implementation of the process for prioritizing and evaluating these problems.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

Three findings of very low safety significance (Green) are documented in this report. Three 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 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 10/12/22

Ami N. Agrawal, Team Leader
Inspection Programs and Assessment Team
Division of Operating Reactor Safety

Docket No. 05000483
License No. NPF-30

Enclosure:
As stated

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CALLAWAY PLANT – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000483/2022010 DATED OCTOBER 12, 2022

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000483
License Number:	NPF-30
Report Number:	05000483/2022010
Enterprise Identifier:	I-2022-010-0000
Licensee:	Ameren Missouri
Facility:	Callaway Plant
Location:	Steedman, MO
Inspection Dates:	August 15, 2022 to September 01, 2022
Inspectors:	D. Dodson, Senior Reactor Inspector C. Henderson, Senior Resident Inspector N. Okonkwo, Reactor Inspector S. Schwind, Resident Inspector
Approved By:	Ami N. Agrawal, Team Leader Inspection Programs and Assessment Team Division of Operating Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution 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 Translate Residual Heat Removal Design Specifications into Procedures and Instructions			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022010-01 Open/Closed	[P.1] - Identification	71152B
The inspectors identified a Green finding and associated non-cited violation of Title 10 *of the Code of Federal Regulations*, Part 50 (10 CFR Part 50), Appendix B, Criterion III, "Design Control," for the licensee's failure to assure that the applicable design basis requirements associated with the residual heat removal system were correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to assure the design basis mission time requirement of 720 hours was translated into allowable oil leakage specifications and instructions for the residual heat removal A and B pumps.			

Failure to Assess Operability of Residual Heat Removal in Low MODES with One Train of Essential Service Water Unavailable			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022010-02 Open/Closed	[H.14] - Conservative Bias	71152B
The inspectors identified a Green finding and associated non-cited violation of Title 10 *of the Code of Federal Regulations*, Part 50 (10 CFR Part 50), Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to complete an adequate operability evaluation in accordance with procedure APA-ZZ-00500, Appendix 1, "Operability Determinations," Revision 36. Specifically, the licensee failed to assess operability of residual heat removal in MODES 5 and 6 when one of its support systems was inoperable and unavailable.			

Failure to Perform Required Inservice Testing of Residual Heat Removal Heat Exchanger Pneumatically (Air) Operated Outlet and Bypass Valves			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022010-03 Open/Closed	None (NPP)	71152B
The inspectors identified a Green finding and associated non-cited violation of Title 10 CFR 50.55a(f), "Preservice and inservice testing requirements," paragraph (4), "Inservice testing standards requirement for operating plants," for the licensee's failure to perform the required			

inservice testing in accordance with the ASME OM Code for trains A and B residual heat removal heat exchanger air operated outlet and bypass valves. Specifically, the licensee failed to perform required inservice surveillance testing for the four pneumatically (air) operated valves as a result of incorrectly classifying them as passive valves.

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
CAPR	05000483/2022010-04	CR 202001783 CAPR1.1 - Reactor Trip Due to 'C" Steam Generator Lo-Lo Level	71152B	Discussed

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 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.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 03.04) (1 Sample)

(1) The inspectors performed a biennial assessment of the effectiveness of the licensee's Problem Identification and Resolution program, use of operating experience, audits and self-assessments, and safety conscious work environment.

- Problem Identification and Resolution Effectiveness: The inspectors assessed the effectiveness of the licensee's Problem Identification and Resolution program in identifying, prioritizing, evaluating, and correcting problems. The team also evaluated the station's compliance with NRC regulations and licensee standards for corrective action programs. The inspectors sampled approximately 250 condition reports and their associated cause evaluations, as applicable. The inspectors also conducted five-year reviews of the residual heat removal system and reactivity control/MODE changes. These reviews included failures, maintenance issues; surveillances; corrective and preventive maintenance; reliability; and maintenance rule performance. Additionally, inspectors reviewed findings and violations issued during the biennial assessment period.

- Operating Experience: The inspectors assessed the effectiveness of the licensee's processes for use of operating experience.

- Self-Assessments and Audits: The inspectors assessed the effectiveness of the licensee's identification and correction of problems identified through review of audits and self-assessments.

- Safety Conscious Work Environment: The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety conscious work environment.

- The inspectors reviewed the corrective actions to prevent recurrence that were opened during IP 95001 Supplemental Inspection (ML22123A227), dated May 6, 2022, associated with a White Unplanned Scrams per 7000 Critical Hours performance indicator, which was reported on February 10,

2021. The inspectors verified the licensee was making adequate progress toward completion of these actions.

INSPECTION RESULTS

Assessment	71152B

Corrective Action Program Effectiveness

Based on the samples reviewed, the team determined that the licensee's corrective action program generally complied with regulatory requirements and self-imposed standards. The licensee's performance in each of the areas of Problem Identification, Problem Prioritization and Evaluation, and Corrective Actions adequately supported nuclear safety. The team noted some challenges associated with the licensee's problem identification and a weakness associated with the licensee's prioritization and evaluation of issues.

Problem Identification

The team found that the licensee was identifying and documenting problems at an appropriately low threshold that supported nuclear safety. During the approximately 2-year assessment period, the licensee initiated approximately 15,000 condition reports, including approximately 6,800 condition reports associated with conditions adverse to quality. However, the team noted some current performance challenges related to identifying issues when given an opportunity and with documenting some issues in the corrective action program. Examples identified by the team included the following:

- The "Inspection Results" section of this report documents Green NCV 05000483/2022010-01, "Failure to Translate Residual Heat Removal Design Specifications into Procedures and Instructions." This current performance violation includes a P.1, Identification cross-cutting aspect. Specifically, when updating the allowed oil leakage calculation for safety-related pumps and motors in 2019, the licensee failed to recognize the residual heat removal mission time used in the calculation deviated from the required 720-hour mission time. This resulted in an allowed oil leakage limit that was approximately 20 times larger than required.

- The "Inspection Results" section of this report documents a minor performance deficiency, "Failure to Initiate Condition Reports in Accordance with Procedure," with eight examples. Specifically, the licensee inadvertently delayed an inspector's access to the radiological controlled area and then failed to enter the issue into the corrective action program until prompted multiple times; the licensee failed to promptly enter into the corrective action program a hydrogen relief valve issue that later challenged station reliability; the licensee did not promptly enter into the corrective action program issues that were reclassified as control room deficiencies; and 10 corrective actions to correct conditions adverse to quality did not have corresponding condition reports, as required by process.

Problem Prioritization and Evaluation

In general, the team found that the licensee was adequately prioritizing and evaluating

problems; however, the team identified a weakness associated with the licensee's evaluation of adverse conditions associated with safety-related equipment issues. Specifically, the team noted six examples of adverse conditions that were inappropriately evaluated. Examples identified by the team included the following:

- The "Inspection Results" section of this report documents Green NCV 05000483/2022010-02, "Failure to Assess Operability of Residual Heat Removal in Low MODES with One Train of Essential Service Water Unavailable." This current performance violation includes an H.14, Conservative Bias cross-cutting aspect because leaders did not take a conservative approach to decision making, particularly when information was incomplete or conditions were unusual like in low MODES, transitioning between MODES, and when safety-related equipment—like one train of safety-related essential service water—was unavailable.

- The "Inspection Results" section of this report documents a minor performance deficiency, "Failure to Appropriately Classify and Evaluate Conditions Adverse to Quality," with five noteworthy examples. Specifically, for four condition reports associated with safety-related excess letdown valve surveillance test failures and a feedwater steam generator level transient, the licensee's evaluations assigned lesser classifications to these issues, and the issue classifications were not commensurate with their safety significance or potential safety significance. As a result, causes were not well understood, and corrective actions were not given appropriate attention or priority.

Effectiveness of Corrective Actions

The team concluded that the licensee generally developed effective corrective actions for the problems evaluated in the corrective action program and took timely corrective actions. Callaway generally implemented these corrective actions in a timely manner, commensurate with their safety significance.

For example, the inspectors evaluated an open corrective action to preclude repetition (CAPR), "CR 202001783 CAPR1.1 - Reactor Trip due to 'C" Steam Generator Lo-Lo Level," to assess the licensee's progress toward completing this action. This CAPR was first documented in 95001 Supplemental Inspection Report 05000483/2022040, issued May 6, 2022 (ML22123A227). Specifically, Supplemental Inspection Report 05000483/2022040 documented the following planned action:

> Incorporate the revised [failure modes and effects analysis (FMEA)] and implement a modification that eliminates the [main feedwater regulating valve] positioner single point vulnerability by installing an automatic positioner swapping device. This corrective action addresses the inadequate FMEA accepted for the digital feedwater modification root cause. At the time of the inspection, this corrective action had not been completed because it required an outage to implement the modification. The modification is scheduled to be implemented during refueling outage 25 (April 4 - May 29, 2022).

Although this CAPR remains open, the inspectors determined that the licensee was and is making adequate progress toward addressing the open CAPR. The "Inspection Results" section of this report provides additional discussion.

Assessment	71152B

Audits and Self-Assessments

The team reviewed a sample of Callaway Plant's departmental self-assessments and audits to assess whether performance trends were regularly identified and effectively addressed. The team also reviewed audit reports to assess the effectiveness of assessments in specific areas. Overall, the team concluded that the licensee had an adequate departmental self-assessment and audit process.

Assessment	71152B

Use of Operating Experience

The team reviewed a variety of sources of operating experience including part 21 notifications and other vendor correspondence, NRC generic communications, and publications from various industry groups including INPO and EPRI. The team determined that Callaway is adequately screening and addressing issues identified through operational experience that apply to the station, and this information is being evaluated in a timely manner once it is received.

The team noted one 2021 example where operating experience reviews could have identified a historical issue but did not. Specifically, the "Inspection Results" section of this report documents Green NCV 05000483/2022010-03, "Failure to Perform Required Inservice Testing of Residual Heat Removal Heat Exchanger Pneumatically (Air) Operated Outlet and Bypass Valves." The inspectors determined that the most significant contributing cause or primary cause of the performance deficiency associated with this finding related to the licensee's historical understanding of its design and licensing basis. Although the inspectors determined that the finding was not indicative of current performance, the inspectors noted that the licensee had an opportunity to reconsider its position when evaluating operating experience. Specifically, the licensee documented its evaluation of applicable operating experience in CR 202102508 and concluded no further action was required. Review of this operating experience was a missed opportunity to take an introspective look at the station's understanding of the issue.

Assessment	71152B

Safety Conscious Work Environment

The team conducted safety conscious work environment focus group interviews with 75 employees and contractors from seven different groups (electrical maintenance; instrumentation and controls; health physics; mechanical maintenance; licensed reactor operators; non-licensed operators; and security). The team also observed interactions between site staff during routine condition report screening and management oversight meetings, and the team interviewed the Employee Concerns Program coordinator and reviewed the results of the latest nuclear safety culture assessment report and case files that may relate to safety conscious work environment. Based upon the interviews and document reviews, the team found that the licensee had a safety conscious work environment where individuals felt free to raise concerns without fear of retaliation. An overwhelming number of interviewed individuals expressed positive experiences raising issues to their supervisors or after documenting issues in condition reports. Additionally, interviewed individuals strongly indicated that they would not hesitate to raise safety concerns to any level of the Callaway organization.

Failure to Translate Residual Heat Removal Design Specifications into Procedures and Instructions			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022010-01 Open/Closed	[P.1] - Identification	71152B

The inspectors identified a Green finding and associated non-cited violation of Title 10 *of the Code of Federal Regulations*, Part 50 (10 CFR Part 50), Appendix B, Criterion III, "Design Control," for the licensee's failure to assure that the applicable design basis requirements associated with the residual heat removal system were correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to assure the design basis mission time requirement of 720 hours was translated into allowable oil leakage specifications and instructions for the residual heat removal A and B pumps.

Description: The inspectors identified several condition reports related to oil leakage for residual heat removal train A and B pumps and motors. To validate the licensee conclusions documented in the oil leakage condition reports, the inspectors reviewed procedure ODP-0016E, Appendix 1, "OT General Inspection Guide," Revision 25, modification package (MP) 19-0103, "Hot Leg Recirculation Valve Position Change and Mission Time Basis Documentation," Revision 0, and the associated spreadsheet of record that calculated the allowed oil leakage for the residual heat removal pumps and their associated motors.

The inspectors noted procedure ODP-0016E, Appendix 1, Step 1.12.4 states that the maximum allowable oil leakage for residual heat removal pumps A and B is 1 drop every 70 seconds. The inspectors also noted that MP 19-0103 determined the mission time is 720 hours (30 days) for the residual heat removal system and its train A and B pumps and motors. Additionally, the inspectors noted that the licensee's spreadsheet of record that was used to determine the maximum allowable oil leakage contained in procedure ODP-0016E, Appendix 1, used a residual heat removal system mission time of 10 hours instead of the design specification mission time of 720 hours. Finally, the inspectors noted the licensee updated the spreadsheet of record in 2019 to correct the mission time for the safety injection pumps but missed an opportunity to identify the spreadsheet nonconforming condition associated with the residual heat removal system mission time.

The inspectors informed the licensee that the incorrect residual heat removal system mission time was used to determine the maximum allowed oil leakage for the residual heat removal train A and B pumps. The licensee initiated condition report (CR) 202205623 and immediately re-evaluated the maximum allowed oil leakage for the residual heat removal system using a mission time of 720 hours and determined the maximum allowed oil leakage was 1 drop every 25 minutes. This was a reduction in margin of approximately a factor of 20 from the previous determined maximum allowed oil leakage of 1 drop every 70 seconds.

Corrective Actions: The licensee issued a night order to reflect the new maximum allowed residual heat removal pump oil leakage until ODP-0016E, Appendix 1 could be updated using 1 drop every 25 minutes and until the licensee performs a past operability review of previously identified residual heat removal system oil leakage.

Corrective Action References: CR 202205623

Performance Assessment:

Performance Deficiency: The licensee's failure to translate residual heat removal mission time design specifications (mission time of 720 hours) into residual heat removal system allowable oil leakage procedures in accordance with 10 CFR Part 50, Appendix B, Criterion III, was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control 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 licensee allowable oil leakage margin was reduced by approximately a factor of 20 (1 drop every 70 seconds to 1 drop every 25 minutes).

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," issued November 30, 2020. The finding was determined to be of very low safety significance (Green) because it (1) was not a deficiency affecting the design or qualification of a mitigating system; (2) does not represent a loss of the probabilistic risk assessment (PRA) function of a single train technical specification system for greater than its allowed outage time; (3) does not represent a loss of PRA function of one train of a multi-train technical specification system for greater than its allowed outage time; (4) does not represent a loss of the PRA function of two separate technical specification systems for greater than 24 hours; (5) does not represent a loss of PRA system and/or function as defined by the PRIB or the licensee's PRA for greater than 24 hours; and (6) does not result in the loss of a high safety-significant, non-technical specification train for greater than 3 days.

Cross-Cutting Aspect: P.1 - Identification: The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, individuals did not recognize deviations from standards and failed to recognize the residual heat removal mission time deviated from the required 720-hour mission time when updating the allowed oil leakage calculation for safety-related pumps and motors in 2019.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in 50.2 and as specified in the licensee application, for those structures, systems, and components to which this appendix applies, are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, from March 2021 to August 2022, the licensee failed to establish measures to assure that applicable regulatory requirements and the design basis, as defined in 50.2 and as specified in the licensee application, for those structures, systems, and components to which the appendix applies, were correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to assure residual heat removal system design basis mission time requirement of 720 hours was translated into allowable residual heat removal system oil leakage procedures and instructions.

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

Failure to Assess Operability of Residual Heat Removal in Low MODES with One Train of Essential Service Water Unavailable			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022010-02 Open/Closed	[H.14] - Conservative Bias	71152B

The inspectors identified a Green finding and associated non-cited violation of Title 10 *of the Code of Federal Regulations*, Part 50 (10 CFR Part 50), Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to complete an adequate operability evaluation in accordance with procedure APA-ZZ-00500, Appendix 1, "Operability Determinations," Revision 36. Specifically, the licensee failed to assess operability of residual heat removal in MODES 5 and 6 when one of its support systems was inoperable and unavailable.

Description: From May 13, 2022, through May 17, 2022, the plant was in MODE 6 with water level less than 23 feet above the top of the reactor vessel flange and then in MODE 5, Loops Not Filled (Technical Specifications 3.9.6 and 3.4.8 apply, respectively). Technical Specifications 3.4.8 and 3.9.6 require both trains of residual heat removal to be operable to ensure the safety function of decay heat removal can be performed. Additionally, the bases for Technical Specification 3.7.8, "Essential Service Water (ESW) System," states, "In MODES 5 and 6, requirements for the [essential service water system] are determined by the systems it supports." During the same timeframe—from May 13, 2022, through May 17, 2022—essential service water system train B was inoperable and unavailable (it was unavailable during and to support ultimate heat sink cooling tower bypass valve (EFHV0066) corrective maintenance).

The inspectors reviewed condition reports (CRs) 202203340, 202203343, 202203378, and 202203400 and noted that the licensee neither declared residual heat removal train B inoperable nor assessed its operability when its support system, essential service water system train B, was unavailable and inoperable for valve EFHV0066 corrective maintenance during the subject timeframe. The inspectors noted Callaway's Technical Specifications, Section 1.1, "Definitions," define "Operable-Operability" as follows:

> A system, subsystem, train, component, or device shall be operable or have operability when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety functions(s) are also capable of performing their related support function(s).

The inspectors noted that Final Safety Analysis Report Section 5.4.7, "Residual Heat Removal System," Subsection 5.4.7.2.7, "System Reliability Considerations, states, "General Design Criteria 34 requires that a system to remove residual heat be provided. The safety function of this required system is to transfer fission product decay heat and other residual heat from the core at a rate sufficient to prevent fuel or pressure boundary design limits from being exceeded." Section 5.4.7.2.7 later goes on to describe the safety grade systems, which perform this function; the section states, "The [Balance of Plant] scope safety grade systems which perform this function for all plant conditions, except a [loss of coolant accident],

are…the component cooling water and service water systems, which operate in conjunction with the [residual heat removal system]."

Additional clarity on the service water systems is later provided in Section 9.2.1, "Station Service Water System," which states, in part, the station service water system consists of the service water system and essential service water system. Section 9.2.1.1, "Service Water System," states, "The service water system is a non-safety-related system which provides a source of heat rejection for plant auxiliaries which require cooling during normal plant operation and normal plant shutdown. The system also supplies cooling water to the safety-related [essential service water system] during normal operation." Section 9.2.1.1.1.1, "Safety Design Bases," also states, "The [service water system] serves no safety-related function." Section 9.2.1.2, "Essential Service Water System," Subsection 9.2.1.2.1.1, "Safety Design Bases," states, "The [essential service water system] is safety-related, is required to function following a [design basis accident], and is required to achieve and maintain the plant in a safe shutdown condition." Safety Design Basis Nine of Subsection 9.2.1.2.1.1 states, "The [essential service water system] operates in conjunction with the component cooling water and other reactor auxiliary components and the ultimate heat sink to provide a means to cool the reactor core and [reactor coolant system] to achieve and maintain a safe shutdown."

The inspectors reviewed TSBCN 07-011, "Primary Licensing Document Change Request – Technical Specification Bases Document," dated April 19, 2007, which the licensee provided as a portion of its basis for not assessing operability of residual heat removal with one train of safety-related essential service water unavailable. Additionally, the inspectors reviewed applicable portions of the Technical Specification Bases, Final Safety Analysis Report, and other documentation that the licensee cited as a basis for relying solely on non-safety-related service water to support residual heat removal system operability in MODE 5, Loops Not Filled, and MODE 6 with water level less than 23 feet above the top of the reactor vessel flange.

The inspectors consulted with the NRC's Office of Nuclear Reactor Regulation and concluded the residual heat removal system is operable in MODE 5, Loops Not Filled, and MODE 6 with water level less than 23 feet above the top of the reactor vessel flange, as required by Technical Specifications 3.4.8 and 3.9.6, respectively, when the support systems of component cooling water and essential service water are operable. With one train of essential service water unavailable —a required support system for residual heat removal operability— from May 13, 2022, through May 17, 2022, operability needed to be assessed, and it was not assessed in accordance with procedure APA-ZZ-00500, Appendix 1, "Operability Determinations," Revision 36, an Appendix B, quality-related procedure, which provides instructions for performing immediate and prompt operability determinations when a current degraded or nonconforming condition is identified. Specifically, Step 2.1, "Scope of [structures, systems, or components (SSCs)] for Operability Determinations," states, in part, "The operability determination process is used to assess operability of SSCs described in the [Technical Specifications]. The scope of SSCs considered within the operability determination process is as follows…SSCs that are NOT explicitly required to be operable by [Technical Specifications] but perform required support functions (as specified by the [technical specification] definition of operability) for SSCs that are required to be operable by [Technical Specifications]." Additionally, Step 4.1.2 states, "*Shift Manager*, for SSCs subject to the Technical Specifications, PERFORM an immediate Operability Determination as to whether the SSC can or can NOT perform its specified safety function(s)."

The inspectors also concluded that the licensee should revisit its rationale for not assessing

operability in May 2022 and revisit TSBCN 07-011 and ensure it is consistent with the design and licensing basis.

Corrective Actions: The licensee entered the issue into its corrective action program as CR 202206443.

Corrective Action References: CR 202206443

Performance Assessment:

Performance Deficiency: The licensee's failure to assess operability of residual heat removal system train B when essential service water system train B was unavailable in MODE 5, Loops Not Filled, and MODE 6 with reactor cavity level less than 23 feet above the top of the reactor vessel flange in accordance with the station's "Operability Determinations" procedure was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control 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 licensee failed to assess operability of residual heat removal train B with essential service water train B unavailable in MODE 5, Loops Not Filled, and MODE 6 with water level less than 23 feet above the top of the reactor vessel flange, and the reliability of residual heat removal train B was adversely impacted with necessary support equipment unavailable—essential service water train B—for residual heat removal train B operability.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609 Appendix G, "Shutdown Operations Significance Determination Process," issued January 8, 2020, and Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," issued May 20, 2022. The finding was determined to be of very low safety significance (Green) because it (1) was not a deficiency affecting the design or qualification of a mitigating system; (2) does not represent a loss of system safety function; (3) does not represent an actual loss of safety function of at least a single train for greater than its technical specification allowed outage time, or two separate safety systems out-of-service for greater than their technical specification allowed outage time; (4) does not represent an actual loss of safety function of one or more non-technical specification trains of equipment during shutdown designated as risk-significant; (5) does not represent degraded reactor coolant system level indication and/or core exit thermal couples when the cavity is not flooded; (6) does not involve an open, cold leg penetration without an adequate, large hot leg vent path; (7) does not involve a seismic, flooding, or severe weather initiating events; and (8) does not involve issues related to fire protection, fire brigade, fire hoses, fire extinguishers, or hose stations.

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, leaders did not take a conservative approach to decision making, particularly when information was incomplete or conditions were unusual like in low MODES, transitioning between MODES, and when safety-related equipment—like one train of safety-related essential service water—was unavailable.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality shall be described by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedure APA-ZZ-00500, Appendix 1, “Operability Determinations,” Revision 36, an Appendix B, quality-related procedure, provides instructions for performing immediate and prompt operability determinations when a current degraded or nonconforming condition is identified. Procedure APA-ZZ-00500, Appendix 1, requires, in part, for SSCs subject to the Technical Specifications, performance of an immediate operability determination as to whether the SSC can or cannot perform its specified safety function.

Contrary to the above, from May 13, 2022, to May 17, 2022, for SSCs subject to the Technical Specifications, an immediate operability determination as to whether the SSC can or cannot perform its specified safety function(s) was not performed. Specifically, for residual heat removal train B, an SSC subject to the Technical Specifications, the licensee did not perform an immediate operability determination as to whether residual heat removal train B could or could not perform its specified safety functions when one of its support systems—essential service water system train B—was inoperable and unavailable.

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

Failure to Perform Required Inservice Testing of Residual Heat Removal Heat Exchanger Pneumatically (Air) Operated Outlet and Bypass Valves			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2022010-03 Open/Closed	None (NPP)	71152B
The inspectors identified a Green finding and associated non-cited violation of Title 10 CFR 50.55a(f), “Preservice and inservice testing requirements,” paragraph (4), “Inservice testing standards requirement for operating plants,” for the licensee’s failure to perform the required inservice testing in accordance with the ASME OM Code for trains A and B residual heat removal heat exchanger air operated outlet and bypass valves. Specifically, the licensee failed to perform required inservice surveillance testing for the four pneumatically (air) operated valves as a result of incorrectly classifying them as passive valves.			
Description: The inspectors performed a five-year review of residual heat removal (RHR) system operating experience and identified condition report (CR) 202102508. This condition report documented operating experience associated with the classification of the train A and B RHR heat exchanger air operated outlet valves (EJFCV0606/0607) and bypass valves (EJFCV0618/0619) in the inservice testing (IST) program, which implements the requirements of the ASME OM Code (2004 Edition through 2006 Addenda) as incorporated by reference in 10 CFR 50.55a. Specifically, the operating experience stated EJFCV 0606, 0607, 0618, and 0619 were incorrectly classified as passive valves in accordance with the ASME OM Code and did not receive required testing in accordance with Subsection ISTC, paragraph ISTC-5132. The licensee documented its evaluation of the operating experience in CR 202102508 and stated:			

These valves have a similar ‘passive’ classification. However, the station is licensed for hot standby (Mode 3) as their ‘safe shutdown’ with regards to scoping in-service testing components required to achieve and maintain ‘safe shutdown.’ Additionally, there was no credited Mode 4 loss-of-coolant accident (LOCA) analysis for the station that would support the condition described in the operating experience. Licensing Document Change Request (LDCR) 202100500 was in progress to clarify the working of the Technical Specification bases 3.5.3 with respect to no credited Mode 4 LOCA analysis applicable for the station. Therefore, the condition as described would not result in change of the mentioned valves from a ‘passive’ to an ‘active’ classification for the station’s inservice testing program. No further action was required.

The inspectors reviewed the licensee’s licensing and design basis, LDCR 202100500, TSTF-575-T, “Technical Specification Task Force Improved Standard Technical Specification Change Traveler,” Revision 0, SNP(UE)-904, “[Emergency Core Cooling System (ECCS)] Performance during MODE 4 Operation,” dated April 9, 1986, SNP(UE)-944, “LOCA in MODE 4 – Notification of NRC of Information,” dated July 8, 1986, OTG-ZZ-00006, “Plant Cooldown Hot Standby to Cold Shutdown,” Revision 82, and M-22EJ01, “Piping and Instrumentation Diagram Residual Heat Removal,” Revision 64. The inspectors noted the following:

- The subject valves are repositioned from their accident position during MODE 4 operations. Specifically, RHR heat exchanger air operated outlet valves (EJFCV0606 and EJFCV0607) are normally in the open position to align the RHR system for ECCS operation. The RHR bypass valves (EJFCV0618 and EJFCV0619) are normally in the closed position to align the RHR system for ECCS operation. Procedure OTG-ZZ-00006 places the first train of RHR in shutdown cooling mode of operation when reactor coolant system (RCS) temperature is less than 350 degrees F and places the second train of RHR into shutdown cooling mode of operation when RCS temperature is less than 240 degrees F in accordance with procedures OTN-EJ-00001, Addendum 3, “Placing A RHR Train In Service for RCS Cooldown,” Revision 25, and OTN-EJ-00001, Addendum 4, “Placing B RHR Train In Service for RCS Cooldown,” Revision 24. This repositions valves EJHCV0606, EJHCV0607, EJFCV0618, and EJFCV0619 out of their accident and fail-safe positions. Additionally, neither these procedures nor other administrative controls restrict the amount of time the four subject valves may be configured out of their safety position. Therefore, the valves would have to be repositioned to their fail-safe position by manual operation (the valves are also capable of automatically repositioning on a loss of power or loss of air to the valves).

- The RHR system, including the subject valves have a function to mitigate the consequences of an accident. Specifically, UFSAR Chapter 15, “Accident Analysis,” includes Section 15.6.5, “Loss-of-Coolant Accidents Resulting From a Spectrum of Postulated Piping Breaks within the Reactor Coolant Pressure Boundary,” and considers small break loss of coolant accidents. Table 15.0-8, “Operator Actions Required for Small and Large Break LOCAs,” states:

  > The generic thermal-hydraulic analysis for the limiting MODE 4 SBLOCA in WCAP-12476, Revision 1, is supplemented by a plant-specific evaluation (Westinghouse letter SCP-10-31, dated May 11, 2010) which demonstrates that the minimum safeguards ECCS flow from one centrifugal

charging pump (CCP) and one residual heat removal (RHR) pump can satisfy the MODE 4 small break LOCA ECCS flow requirements…"

Section 16.5.3, "ECCS Subsystems – MODE 4 Entry," Subsection 16.5.3.1.2, "Bases," provides additional similar discussion of WCAP-12476, Revision 1, and notes:

> That topical report also presents a generic bounding thermal-hydraulic analysis for the MODE 4 small break loss of coolant accident based on limiting representative plant parameters with the accumulators isolated. The assumed ECCS availability is based on one OPERABLE ECCS train consisting of a centrifugal charging subsystem and an RHR subsystem.

Additionally, SNP(UE)-904 and 944 are part of a vendor part 21 notification to the agency associated with shutdown LOCAs and further reinforce why RHR, including the subject valves, must be in the ECCS mode of operation to mitigate the consequences of an accident. These documents state, in part:

> Certain combinations of operator actions and equipment status were assumed in reaching the conclusion that ECCS performance would be acceptable in the event of a credible small break LOCA. Without these combinations or some other equivalent combination, the effectiveness of the ECCS cannot be assured for a small break LOCA.

Similarly, Technical Specification (TS) 3.5.3 and TS Bases 3.5.3, "Emergency Core Cooling Systems (ECCS) – Shutdown," requires, "One ECCS train shall be operable" in MODE 4. This includes a note stating an RHR subsystem may be considered operable during alignment and operation for decay heat removal if the system is capable of being manually realigned to the ECCS mode of operation. This allowance for manual realignment is to ensure RHR can respond to the small break LOCA. TS Bases 3.5.3 also states, "With no ECCS RHR subsystem OPERABLE, the plant is not prepared to respond to a loss of coolant accident or to continue a cooldown using the RHR pumps and heat exchangers."

- The ASME OM Code requires valves that are required to change position to accomplish a specific function in mitigating the consequences of an accident to be considered active valves. Specifically, ASME OM Code, Subsection ISTA, paragraph ISTA-2000, defines active valves as, "Valves that are required to change obturator position to accomplish a specific function in shutting down a reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident." Table ISTC-3500-1, "Inservice Test Requirements," specifies applicable requirements for active and passive valves with respect to exercise and stroke-time testing, leakage testing, position indication verification, and fail-safe testing. Additionally, ASME OM Code, Subsection ISTC, paragraph ISTC-3510, "Exercising Test Frequency," together with paragraph ISTC-5130, "Pneumatically Operated Valves," subparagraph ISTC-5131(a) require, that active pneumatically operated active valves shall have their stroke times measured when exercised on a quarterly basis in accordance with ISTC-3500.

The inspectors reviewed the above information in consultation with the NRC Office of Nuclear Reactor Regulation and concluded the following:

- A LOCA or any design basis accident, such as a loss of offsite power, are credible events required to be mitigated in MODE 4 in accordance with the regulatory requirements and the licensee's licensing and design basis.

- RHR valves EJHCV0606, EJHCV0607, EJFCV0618, and EJFCV0619 would be repositioned manually to their accident position in the event of a LOCA in MODE 4. As a result, the valves should have been classified as active valves and tested in accordance with ASME OM Code, contrary to the licensee conclusions documented in CR 202102508.

- The subject valves have been classified as passive valves prior to and since 2004.

- The licensee should revisit the conclusions in LDCR 202100500, which state:

> The current TS 3.5.3 bases mischaracterized the licensing and design basis for the ECCS during shutdown (Mode 4). There are no design basis accidents or transient analyses that are initialized in the applicability of TS 3.5.3 and that credit ECCS train. There are no analyses that characterize the probability of occurrence of a design basis accident or transient in the TS 3.5.3 applicability. The ECCS in the TS 3.5.3 applicability does not satisfy the 10 CFR 50.36(c)(2)(ii) Criterion 3 description of, "A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient."

Corrective Actions: The licensee entered the issue into its corrective action program as CR 202206474.

Corrective Action References: CR 202206474

Performance Assessment:

Performance Deficiency: The licensee's failure to perform required inservice surveillance testing for trains A and B RHR heat exchanger air operated outlet and bypass valves in accordance with the ASME OM Code, as incorporated by reference in 10 CFR 50.55a, was a performance deficiency. The failure to test the valves in accordance with the ASME OM Code was due to the licensee failing to classify them as active valves.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, degraded valve performance could go undetected without periodic testing and trending in accordance with the ASME OM Code, and degraded valve performance would have the potential to adversely impact system operation in response to an accident. This finding was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609 Appendix G, "Shutdown Operations Significance Determination Process," issued January 8, 2020, and Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," issued May 20, 2022. The finding was determined to be of very low safety

significance (Green) because it (1) was not a deficiency affecting the design or qualification of a mitigating system; (2) does not represent a loss of system safety function; (3) does not represent an actual loss of safety function of at least a single train for greater than its TS allowed outage time, or two separate safety systems out-of-service for greater than their TS allowed outage time; (4) does not represent an actual loss of safety function of one or more non-TS trains of equipment during shutdown designated as risk-significant; (5) does not represent degraded RCS level indication and/or core exit thermal couples when the cavity is not flooded; (6) does not involve an open, cold leg penetration without an adequate, large hot leg vent path; (7) does not involve a seismic, flooding, or severe weather initiating events; and (8) does not involve issues related to fire protection, fire brigade, fire hoses, fire extinguishers, or hose stations.

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 CFR 50.55a(f), “Preservice and inservice testing requirements,” paragraph (4) requires, in part, that pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirements set forth in ASME OM Code and addenda that become effective subsequent to editions and addenda specified in paragraphs (f)(2) of this section and that are incorporated by reference in paragraph (a)(1)(iv) of this section. Furthermore, paragraph (f)(4)(ii) requires, “[i]nservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section 18 months before the start of the 120-month interval.” The current ASME OM Code of record for Callaway is the 2004 Edition through the 2006 Addenda of the ASME *Code for Operation and Maintenance of Nuclear Power Plants*, as incorporated by reference in 10 CFR 50.55a. ASME OM Code, Subsection ISTC, paragraph ISTC-5131(a), requires that active pneumatically operated active valves shall have stroke times measured when exercised in accordance with ISTC-3500.

Contrary to the above, since 2004, the licensee failed to test four active pneumatically operated ASME OM Code Class 2 valves and measure stroke times in accordance with the ASME OM Code. Specifically, the licensee failed to measure stroke times for train A and B RHR heat exchanger outlet and bypass valves in accordance with ASME OM Code, Subsection ISTC, paragraph ISTC-5131(a), as incorporated by reference in 10 CFR 50.55a.

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

CAPR (Discussed)	CR 202001783 CAPR1.1 - Reactor Trip Due to 'C" Steam Generator Lo-Lo Level CAPR 05000483/2022010-04	71152B

Description: At the conclusion of the 95001 supplemental inspection, which was documented in 95001 Supplemental Inspection Report 05000483/2022040, issued May 6, 2022, the inspectors opened corrective action to preclude repetition (CAPR), “CR 202001783 CAPR1.1 - Reactor Trip Due to 'C" Steam Generator Lo-Lo Level.” Specifically, the licensee planned for this CAPR to re-evaluate the failure modes and effects analysis (FMEA) associated with main

feedwater regulating valve (MFRV) positioner modification under MP 03-1002 to address the previously unidentified failure mode and any additional failure modes, as applicable, associated with the MFRVs. Additionally, the licensee planned to incorporate the revised FMEA and implement modification (MP 21-001) to eliminate the MFRV single point vulnerability. This set of actions was developed to address the root cause, “The review and owner acceptance of the failure modes and effects analysis (FMEA) prepared by the vendor for modification MP 03-1002 (as documented in J-2017-00383 revision 0) did not identify and mitigate a discreet internal positioner failure mode that could lead to inability to control a main feed regulating valve (MFRV).”

At the conclusion of the problem identification and resolution team inspection, the licensee was making progress toward completing these actions. Specifically, the licensee made progress toward completing this CAPR during and proximate to the 2022 refueling outage but was unable to close this CAPR because the licensee identified additional single point vulnerabilities that needed to be addressed. The licensee’s revised plan to complete the subject CAPR and implement all necessary corrective actions is expected to be completed in the 2023 refueling outage. As a result, CAPR, “CR 202001783 CAPR1.1 - Reactor Trip due to 'C" Steam Generator Lo-Lo Level,” remains open.

Minor Performance Deficiency	71152B

Minor Performance Deficiency: The inspectors identified eight examples of a minor performance deficiency associated with the licensee’s failure to follow corrective action program procedures and appropriately initiate condition reports for conditions adverse to quality, which included inadvertently delaying an inspector’s access to the radiological controlled area, a hydrogen relief valve issue that challenged station reliability, reclassification of conditions as control room deficiencies, and four issues with corrective actions to correct a condition adverse to quality in place. Specifically, APA-ZZ-00500, “Corrective Action Program,” Revision 71 (and later revisions), Step 4.1.1, states, “Anyone can, and is expected to initiate a condition report (CR)…Conditions include, but are not limited to: A Condition Adverse to Quality as defined by APA-ZZ-00500, Appendix 17, Screening Process Guidelines, Attachment 1.” APA-ZZ-00500, Appendix 17, “Screening Process Guidelines,” Revision 042 (and later revisions), Attachment 1, “Adverse Condition Classification,” includes examples of conditions adverse to quality and includes “A condition NOT in compliance with federal, state, or local regulations…” These issues were entered into the corrective action program as CRs 202205460 and 202206513.

Screening: The inspectors determined the performance deficiency was minor. The inspectors determined the performance deficiency did not adversely affect a cornerstone objective, would not lead to a more significant safety concern if left uncorrected, and could not reasonably be viewed as a precursor to a significant event.

Minor Performance Deficiency	71152B

Minor Performance Deficiency: The inspectors identified five examples of a minor performance deficiency associated with the licensee failing to follow corrective action program procedures and inappropriately classifying five conditions reports (CRs) associated with conditions adverse to quality. Specifically, four condition reports associated with safety-related excess letdown isolation valve testing failures (CRs 202102054, 202102055, 202102056, 202105388) were classified as ADCN-5 CRs. APA-ZZ-00500, Appendix 17, “Screening Process Guidelines,” Revision 42 (and later revisions) define ADCN-5 CRs as

"Admin Close (no additional corrective action is required)." The fifth example involves an ADCN-4 CR (CR 202203767); ADCN-4 condition reports are defined as "Adverse Condition-Corrective Action Only." CR 202203767 is associated with a May 30, 2022, steam generator level transient that resulted in the steam generator narrow range level increasing approximately 30 %, two steam generator atmospheric steam dumps automatically opening, and a pressure transient ranging from 2206 psig to 2273 psig in the pressurizer. When questioned, the licensee could not explain why the magnitude of the transient was larger than typically experienced. In each of the five cases, the conditions were conditions adverse to quality and causes were not well understood; nonetheless, each of the CRs were given lower classifications (ADCN-4 or ADCN-5) that did not evaluate cause. The licensee established procedure APA-ZZ-00500, Appendix 17, "Screening Process Guidelines," to provide guidance on classification of CRs. Attachment 1, "Adverse Condition Classification Matrix Guideline," indicates that severity level B CRs with uncertain or complex causes are most appropriately classified as ADCN-3 CRs. Contrary to this guidance, the five examples of severity level B CRs with uncertain or complex causes were not classified as ADCN-3 CRs, which impacts the level of evaluation, corrective actions, and oversight of the conditions. These issues were entered into the corrective action program as CRs 202205625 and 202206513.

Screening: The inspectors determined the performance deficiency was minor. The inspectors determined the performance deficiency did not adversely affect a cornerstone objective, would not lead to a more significant safety concern if left uncorrected, and could not reasonably be viewed as a precursor to a significant event.

EXIT MEETINGS AND DEBRIEFS

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

- On September 1, 2022, the inspectors presented the biennial problem identification and resolution 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
71152B	Calculations	MP 19-0103	Mission Time Basis Document	0
71152B	Calculations	NG-23	MCC Setpoint Calculation	02
71152B	Corrective Action Documents	Condition Report YYYYNNNNN	200910285, 201204439, 201504790, 201806177, 201901764, 201904454, 201905246, 201907960, 201907973, 202000115, 202000221, 202000245, 202000511, 202000689, 202000742, 202000751, 202000777, 202000782, 202000878, 202001040, 202001353, 202001455, 202001556, 202001748, 202001757, 202001766, 202001769, 202001772, 202001783, 202001785, 202001786, 202001788, 202001790, 202001795, 202001836, 202001879, 202001915, 202001922, 202001933, 202001934, 202001953, 202001999, 202002015, 202002027, 202002059, 202002080, 202002084, 202002088, 202002108, 202002230, 202002302, 202002303, 202002338, 202002344, 202002359, 202002479, 202002483, 202002494, 202002513, 202002569, 202002735, 202002741, 202002770, 202002873, 202002879, 202002914, 202003016, 202003044, 202003091, 202003108, 202003138, 202003154, 202003191, 202003214, 202003402, 202003527, 202003539, 202003632, 202003655, 202003660, 202003680, 202003693, 202003696, 202003739, 202003774, 202003812, 202003832, 202003919, 202003968, 202004022, 202004044, 202004351, 202004374, 202004568, 202004586, 202004628, 202004731, 202004735, 202004753, 202004782, 202004895, 202004898, 202004925, 202004979, 202005051, 202005112, 202005164, 202005178, 202005367, 202005552, 202006088, 202006108, 202006217, 202006291, 202006304, 202006497, 202006628, 202006691, 202006933, 202007247,	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			202007410, 202100189, 202100209, 202100214, 202100228, 202100303, 202100306, 202100365, 202100367, 202100447, 202100780, 202101125, 202101157, 202101460, 202101554, 202101776, 202102012, 202102014, 202102033, 202102042, 202102054, 202102055, 202102056, 202102064, 202102087, 202102201, 202102237, 202102437, 202102453, 202102462, 202102466, 202102508, 202102540, 202102855, 202102924, 202103140, 202103141, 202103142, 202103550, 202103646, 202103665, 202103696, 202103733, 202103910, 202103912, 202104083, 202104382, 202104445, 202104464, 202104537, 202104606, 202104697, 202104738, 202104746, 202104792, 202104948, 202105215, 202105234, 202105255, 202105269, 202105314, 202105376, 202105388, 202105497, 202102556, 202105517, 202105574, 202105645, 202105647, 202105665, 202105820, 202105951, 202106487, 202106545, 202106768, 202106909, 202107019, 202200091, 202200286, 202200375, 202200424, 202200936, 202200978, 202201309, 202201526, 202201540, 202201874, 202202138, 202202259, 202202913, 202202913, 202202980, 202203339, 202203340, 202203343, 202203345, 202203345, 202203389, 202203419, 202203452, 202203458, 202203635, 202203679, 202203721, 202203723, 202203749, 202203751, 202203767, 202203846, 202203889, 202203930, 202204246, 202204327, 202204499, 202204750, 202205791, 202206443, 202206474	
71152B	Corrective Action Documents Resulting from Inspection	Condition Reports YYYYNNNNN	202205518, 202205460, 202205625, 202205676, 202205706, 202205791, 202206443, 202206474, 202206512, 202206513	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Drawings	E-051-00058	SCR	12
71152B	Drawings	M-22AL01(Q)	Piping & Instrumentation Diagram Auxiliary Feedwater System	51
71152B	Drawings	M-22EJ01	Piping and Instrumentation Diagram Residual Heat Removal	64
71152B	Miscellaneous		Callaway Position Paper Regarding RHR Cooling Water Support During MODES 5 and 6	08/2022
71152B	Miscellaneous		Position Paper on EJHCV0606/607 and EJFCV618/619 Requirement to Reposition to Mitigate the Consequences of an Accident	08/2022
71152B	Miscellaneous	N/A	Email from McDonald, Morgan A to Gorzoch, Shannon on Operator Burden Benchmarking	August 18, 2022
71152B	Miscellaneous	05000483/2021001	Callaway Plant – Integrated Inspection Report	May 11, 2021
71152B	Miscellaneous	18003541.500 Addendum	Investigate Erratic Flow Indication BGFT0154	N/A
71152B	Miscellaneous	20002062.500 Addendum	Investigate/Resolve cause for ESFAS alarm on SA066X	0
71152B	Miscellaneous	202000212-018	CM.3 GAP Risk Management	
71152B	Miscellaneous	202000212-019	Plant Status Control	
71152B	Miscellaneous	202000212-021	Diesel Fuel Oil Program	
71152B	Miscellaneous	202200120-028	Pre-PI&R Self-Assessment Report	
71152B	Miscellaneous	54664_Schulz Electric	Part 21 Notification-Motor Bearing Oil Reservoir Recoating	4/14/2020
71152B	Miscellaneous	ACMP for CR 202001455 Control Rod H8	Adverse Condition Monitoring and Contingency Plan for Response to Sluggish Operation of the Moveable Gripper on Control Rod HO8	3/18/2020
71152B	Miscellaneous	AP20002	Nuclear Oversight Audit of Configuration Management	03/25/2020
71152B	Miscellaneous	AP20003	Nuclear Oversight Audit of Inservice Inspection and Inservice Testing	10/27/2020
71152B	Miscellaneous	AP21002	Nuclear Oversight Audit of Radiation Protection Program	03/16/2021
71152B	Miscellaneous	Audit Report	Nuclear Oversight Audit of Emergency Preparedness	09/03/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		AP20007	AP20007	
71152B	Miscellaneous	Audit Report AP21006	AP21006-Maintenance, Work Management, and M and TE Audit Report	9/28/2021
71152B	Miscellaneous	Audit Report AP21008	Nuclear Oversight Audit of the Corrective Action Program AP21008	10/20/2021
71152B	Miscellaneous	Audit Report AP22003	Nuclear Oversight Audit of Security/Cyber-Security Programs AP22003	06/30/2022
71152B	Miscellaneous	Burden benchmark 1	Benchmark of this possible Operator Burden example from Response from energy-northwest	June 1, 2020
71152B	Miscellaneous	Burden benchmark 10	Benchmark of this possible Operator Burden example Response from Entergy	June 1, 2020
71152B	Miscellaneous	Burden benchmark 2	Benchmark of this possible Operator Burden example Response from STPEGS	June 1, 2020
71152B	Miscellaneous	Burden benchmark 3	Benchmark of this possible Operator Burden example Response from Dominion Energy	June 1, 2020
71152B	Miscellaneous	Burden benchmark 4	Benchmark of this possible Operator Burden example Response from Ontario Power Generation (OPG)	June 1, 2020
71152B	Miscellaneous	Burden benchmark 5	Benchmark of this possible Operator Burden example Response from AEP	June 1, 2020
71152B	Miscellaneous	Burden benchmark 6	Benchmark of this possible Operator Burden example Response from Talen energy	June 1, 2020
71152B	Miscellaneous	Burden benchmark 7	Benchmark of this possible Operator Burden example Response from Point Lepreau Generating Station - NBP Power	June 1, 2020
71152B	Miscellaneous	Burden benchmark 8	Benchmark of this possible Operator Burden example Response from First Energy Corp.	June 1, 2020
71152B	Miscellaneous	Burden benchmark 9	Benchmark of this possible Operator Burden example Response from Duke Energy	June 1, 2020
71152B	Miscellaneous	CA3197 CR202001455 Final	ADCN-3/202001455/Unexpected Rod Drop H8	5/5/2020
71152B	Miscellaneous	CA5634 202103665 EFA	Equipment Failure Analysis on spurious Halon Discharge in NB01 for CR NO.: 202103665	07/15/2021

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71152B	Miscellaneous	CA5634 202202913 EFA	Equipment Failure Analysis on Tan Delta results on C RCP cables between PA0205 and PA05	05/20/2022
71152B	Miscellaneous	CA5634-EFA-202001455	Unexpected Rod Drop H8	5/7/2020
71152B	Miscellaneous	CR 202006088, NG01BFF3	CR 202006088 NG01BFF3 info from Engineering	N/A
71152B	Miscellaneous	Curtis Wright part 21 report	Part 21 – Curtiss-Wright Actuator Brake Wiring Deficiency Report	4/07/2022
71152B	Miscellaneous	DTI-004 Attachment 1	Callaway Escalation Report Associated with CR 202105358	09/23/2021
71152B	Miscellaneous	ECP File 2020-10-05		
71152B	Miscellaneous	ECP File 2020-10-15		
71152B	Miscellaneous	ECP File 2020-11-12		
71152B	Miscellaneous	ECP File 2021-05-07		
71152B	Miscellaneous	ECP File 2021-08-05		
71152B	Miscellaneous	ECP File 2022-05-12		
71152B	Miscellaneous	Email from Bryan Parker 8-18	PI&R Discussion on Operators Burden	8/18/2022
71152B	Miscellaneous	ENS 54914	Eaton Part 21 Report – Continuously Energized Eaton D26 Relays	9/28/2020
71152B	Miscellaneous	FAR-21001285-01-01	Failure Analysis Report for NLI Power Supply: NLI-STM15-15M20 S/N: NLI-STM15-15M20-1014-0	0
71152B	Miscellaneous	I2R	Documentation of Door Issues	10/15/2020
71152B	Miscellaneous	LER 2020-005	Inoperable isolation valve between safety-related Essential Service Water and non-safety-related Service Water	11/17/2020
71152B	Miscellaneous	M 19-0088	Atmospheric Steam Dump Valves Environmental	003

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			Qualification	
71152B	Miscellaneous	MP 21-0001	Eliminate the MFRV Single Point Vulnerability and Improve Reliability [modification package]	002
71152B	Miscellaneous	N/A	Callaway CAP Presentation – Callaway Corrective Action Program	N/A
71152B	Miscellaneous	N/A	CR 202001455 Personnel Statement	3/13/2020
71152B	Miscellaneous	N/A	Request for CR Change or Rescreen of CR 202004979	12/02/2020
71152B	Miscellaneous	N/A	Operating Experience (OE) for CR 202105376	N/A
71152B	Miscellaneous	N/A	NO-23 CEC Response on Thermography SAT Results	N/A
71152B	Miscellaneous	N/A	NRC questions related to the cause work on CR 202004735 - Unexpected SA066X Alarm from EFHV0024	N/A
71152B	Miscellaneous	N/A	Safety and Nuclear Professional Stand Down	Jan 27, 2021
71152B	Miscellaneous	Night Order	HCST Level and ALHV0220 Walkdown Following Actuation	05/18/2020
71152B	Miscellaneous	NO-23 CEC Response	Thermography inspection findings from Job 19513706.500/510	N/A
71152B	Miscellaneous	NOS Observation	CARB - Review of Corrective Action Change Request	11/07/2020
71152B	Miscellaneous	NOS Observation	CARB - Review of Corrective Action Change Request	11/24/2020
71152B	Miscellaneous	NRC IN 2020-01	Increased Electronic Equipment Issues After Electrostatic Cleaning	10/14/2020
71152B	Miscellaneous	NRC IN List 2000-2021	NRC Information Notices - 2000-2021 YTD data date 20210823	N/A
71152B	Miscellaneous	NRC: 20:026	New Information Concerning a 10 CFR Part 21 Notification of Existence of a Defect from Framatone for Failure of Eaton NBF66F Relay, Part Numbers ANP00156, ANP00159, and ANP00160 to change State	October 23, 2020
71152B	Miscellaneous	O120.0001	Equipment Out of Service Log Shift Turnover Report	08/30/2022

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71152B	Miscellaneous	ODMI 20-0001 H8 Dropped Rod	ODMI for 2020-01455 H8Dropted Rod	3/14/2020
71152B	Miscellaneous	ODMI 21-002	202105376 - Loss of 'B' Train LSELS Power Supply, 202105736 - Loss of Power Supply to SA036E	10/25/2021
71152B	Miscellaneous	OTA-RK-00020, Addendum 53A	Procedure Review for RHR Heat Exchanger B CCW Flow High Low Procedure OTA-RK-00020, Addendum, 53A Rev.4	05/20/10
71152B	Miscellaneous	OTA-RK-00020, Addendum 61B	Process Radiation High	N/A
71152B	Miscellaneous	P21-11042021,	Deviation Identified in NLI-STM-15-15M20 and NLI-STM48-14M20 Power supplies provided under Callaway PO: 773548_SR	11/10/2021
71152B	Miscellaneous	Request for Resolution	Evaluate the Addition of a Time Delay on the Actuation Set-point of ALHV0220	0
71152B	Miscellaneous	SA 202000212-047	Self-Assessment for Maintenance and Technical Training Post Evaluations after Training	06/30/2021
71152B	Miscellaneous	SA 202007247-004 - Fire Brigade	Fire Brigade Simple Self-Assessment	12/28/2021
71152B	Miscellaneous	SA 202007247-038	Callaway Nuclear Safety Culture Assessment Report	10/2021
71152B	Miscellaneous	SARA Final C RCP Cable	Tan Delta results on C RCP cables between PA0205 and PAD5	05/04/2022
71152B	Miscellaneous	SCP-19-5	Transmittal of Callaway ECCS Pump Mission Times with Respect to Post-Accident Recovery Actions	01/25/2019
71152B	Miscellaneous	SCP-19-5	Transmittal of Callaway ECCS Pump Mission Times with Respect to Post-Accident Recovery Actions	01/25/2019
71152B	Miscellaneous	SNP(UE)-904	ECCS Performance During MODE 4 Operation	04/09/1986
71152B	Miscellaneous	SNP(UE)-944	LOCA in MODE 4 - Notification of NRC of Information	07/08/1986
71152B	Miscellaneous	ST-03446	Pre-Job Brief for DG 'A' Sequencer	N/A
71152B	Miscellaneous	Test Report - 20512020.500	TD New 20512020.500 TD New // VLF Tan Delta Test Report 13.8kV Brown 4 Step TD	4/29/2022
71152B	Miscellaneous	TSBCN 07-011	Technical Specification Bases Change Notice	04/19/2007
71152B	Miscellaneous	Westinghouse TB-06-017	Westinghouse Technical Bulletin B-06-017 on CRDM Transitory Misstepping Due to Crud	12/12/2006

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71152B	Procedures	08006368.520	Perform MOV Motor Rotation Check & Diagnostic Test on EJHV8811A	02
71152B	Procedures	12511491.301	Install Temp Lighting/Power for NG08F Outage	0
71152B	Procedures	12511491.500	CLEAN/INSPECT MCC NG08F	N/A
71152B	Procedures	16002805.500	I/R RCP B Vibration System-Vertical Shaft Vibration Spike	0
71152B	Procedures	16002805.700	Restore Alarm for B RCP Vertical Shaft Vibration Shaft Vibration Monitor and Others	0
71152B	Procedures	16002805.700	Restore Alarm for B RCP Vertical Shaft Vibration Monitor and Others	0
71152B	Procedures	16504739.450 Addendum	Install New Breaker into NG01BFF3	00
71152B	Procedures	16504739.500 Addendum	TEST Breaker removed from NG01BFF3	1
71152B	Procedures	17511579.500 Addendum	Train A Diesel Generator and Sequencer Testing Job	0
71152B	Procedures	18003541.500 Addendum	Investigate Erratic Flow Indication BGFT0154	01
71152B	Procedures	19001090-500 Addendum	GKRE0005 - IFIN Investigation	0
71152B	Procedures	19001090-600	IFIN Investigation Set up a Recorder on GKRE0005	0
71152B	Procedures	19513706.450 Addendum	Place A train Equipment inservice	02
71152B	Procedures	20003672.520	Performance EMAX Testing on EJHV881A AT NG01BFF3	0
71152B	Procedures	21001389.550 Addendum	IFIN Investigation NG01BKF4 Did Not Trip As expected by a Load Shed Signal From LSELS	1
71152B	Procedures	21502673.301	Install Temp Lighting/Power for NG08F Outage	0
71152B	Procedures	21502673.500	Cleaning/Inspect MCC NG08F	0
71152B	Procedures	APA-ZZ-00303	Classification of Systems	19
71152B	Procedures	APA-ZZ-00322, Appendix D	Work Control Center Organization and Operation	40

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71152B	Procedures	APA-ZZ-00322, Appendix E	Post-Maintenance Test Program	17
71152B	Procedures	APA-ZZ-00340	Surveillance Program Administration	51
71152B	Procedures	APA-ZZ-00356	Pump and Valve Inservice Test Program Administrative Correction	28
71152B	Procedures	APA-ZZ-00500	Corrective Action Program	74
71152B	Procedures	APA-ZZ-00500	Corrective Action Program	73
71152B	Procedures	APA-ZZ-00500	Corrective Action Program	75
71152B	Procedures	APA-ZZ-00500 Appendix 1	Operability Determinations	35
71152B	Procedures	APA-ZZ-00500 Appendix 10	Trending Program	21
71152B	Procedures	APA-ZZ-00500 Appendix 17	Screening Process Guidelines	39
71152B	Procedures	APA-ZZ-00500 Appendix 17	Screening Process Guidelines	44
71152B	Procedures	APA-ZZ-00500 Appendix 17	Screening Process Guidelines	42
71152B	Procedures	APA-ZZ-00500, Appendix 1	Operability Determinations	36
71152B	Procedures	APA-ZZ-00500, Appendix 12	Significant Adverse Condition - ASCN-1	38
71152B	Procedures	APA-ZZ-01400, Appendix E	Operating Experience	35
71152B	Procedures	E-1	Loss of Reactor or Secondary Coolant	024
71152B	Procedures	EDP-ZZ-01113	Infrared Thermography Program Guide	12
71152B	Procedures	EDP-ZZ-01128	Maintenance Rule Program	33
71152B	Procedures	EDP-ZZ-01131	Plant Health and Performance Monitoring Program	030
71152B	Procedures	EDP-ZZ-04026	10 CFR PART 21 Evaluations	14
71152B	Procedures	EDP-ZZ-06000	Vendor Equipment Technical Information Review Program	22

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71152B	Procedures	ES-0.2	Natural Circulation Cooldown	020
71152B	Procedures	FPP-ZZ-00009	Fire Protection Training Program	39
71152B	Procedures	ISP-NF-00001	Loop Misc. NF039A Relay Driver Test	015
71152B	Procedures	J-00SP	Radiation Monitoring Systems	1
71152B	Procedures	ODP-ZZ-00027	Safety Function Determination Program	21
71152B	Procedures	ODP-ZZ-0016E, Appendix 1	OT General Inspection Guide	24
71152B	Procedures	ODP-ZZ-0016E, Appendix 1	OT General Inspection Guide	25
71152B	Procedures	OSP-EJ-PV04A	Train A RHR and RCS Check Valve Inservice Test	20
71152B	Procedures	OSP-EJ-PV04B	Train B RHR and RCS Check Valve Inservice Test	23
71152B	Procedures	OSP-EJ-V002A	RHR Pump Containment Sump Suction and RWST Suction Inservice Test	35
71152B	Procedures	OSP-NE-00001A	Standby Diesel Generator A Periodic Tests	68
71152B	Procedures	OSP-NE-00001B	Standby Diesel Generator B Periodic Tests	69
71152B	Procedures	OSP-SA-2413A	Train A Diesel Generator and Sequencer Testing	31
71152B	Procedures	OSP-SF-00002	Control Rod Partial Movement	28
71152B	Procedures	OSP-ZZ-00001	Control Room Shift and Daily Log Readings and Channel Checks	95
71152B	Procedures	OTA-RK-00020, Add. 51A	RHR Heat Exchanger A CCW Flow High Low	04
71152B	Procedures	OTA-RK-00020, Addendum 61B	Process Radiation High	01
71152B	Procedures	OTA-RK-0026	Digital Feedwater Trouble	005
71152B	Procedures	OTA-SP-RM011	Radiation Monitor Control Panel RM-11	46
71152B	Procedures	OTG-ZZ-00006	Plant Cooldown Hot Standby to Cold Shutdown	82
71152B	Procedures	OTN-AB-00001	Main Steam and Steam Dump Systems	024
71152B	Procedures	OTN-EJ-00001	Residual Heat Removal System	28
71152B	Procedures	OTN-EJ-00001, Addendum 3	Placing A RHR Train inservice for RCS Cooldown	25
71152B	Procedures	OTN-EJ-00001,	Placing B RHR Train inservice for RCS Cooldown	24

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		Addendum 4		
71152B	Procedures	OTO-BB-00010	Shutdown LOCA	13
71152B	Procedures	OTO-SA-00001	ESFAS Verification and Restoration	45
71152B	Procedures	PDP-ZZ-00023, Appendix-A	Priority Screening Matrix	07
71152B	Procedures	POL0007	Decision Making for Use of Disciplinary Action	12
71152B	Procedures	SDP-SF-00022	Reporting of Safeguards Events	023
71152B	Procedures	WDP-ZZ-00010	Identification, Control, Storage, and Disposition of Shelf Life Items	21
71152B	Procedures	WDP-ZZ-00010, Appendix A	Generic and Specific Shelf Life Items List	7
71152B	Work Orders	16002805, 16504739 250, 17504716, 17504716 900, 17505326, 17505696.900, 17508475, 17511579.500, 18003541, 18511272.901, 19001090, 19512262.915, 19513706, 20000538.546, 20002062, 20003672.520, 20004019, 20503825.500, 20504393.500, 20510409, 20510410,		

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		21002026, 21004076.505, 21004076.915, 22002415, 22002571, 22002572, 22002573, 22002574,		