



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

November 5, 2019

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

SUBJECT: CALLAWAY PLANT – INTEGRATED INSPECTION  
REPORT 05000483/2019003

Dear Mr. Diya:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Callaway Plant. On October 2, 2019, the NRC inspectors discussed the results of this inspection with Mr. T. Herrmann, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

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

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

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

**/RA/**

Neil F. O'Keefe, Chief  
Reactor Projects Branch B  
Division of Reactor Projects

Docket No. 05000483  
License No. NPF-30

Enclosure: As stated

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SUBJECT: CALLAWAY PLANT – INTEGRATED INSPECTION  
REPORT 05000483/2019003 – November 5, 2019

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**U.S. NUCLEAR REGULATORY COMMISSION**  
**Inspection Report**

Docket Number: 05000483

License Number: NPF-30

Report Number: 05000483/2019003

Enterprise Identifier: I-2019-003-0006

Licensee: Union Electric Company

Facility: Callaway Plant

Location: Steedman, MO 65077

Inspection Dates: July 1 to September 30, 2019

Inspectors: D. Bradley, Senior Resident Inspector  
S. Janicki, Resident Inspector  
J. Drake, Senior Reactor Inspector  
P. Elkmann, Senior Emergency Preparedness Inspector  
S. Hedger, Emergency Preparedness Inspector  
N. Hernandez, Operations Engineer  
J. Kirkland, Senior Operations Engineer  
G. Pick, Senior Reactor Inspector  
E. Schrader, Emergency Preparedness Specialist

Approved By: Neil F. O'Keefe, Chief  
Reactor Projects Branch B  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at the Callaway Plant in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. Self-revealed findings, violations, and additional items are summarized in the table below. A licensee-identified non-cited violation is documented in report section 71153.

### List of Findings and Violations

Failure to Promptly Identify and Correct Butterfly Valve Issues			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2019003-01 Open/Closed	[P.5] - Operating Experience	71152
The inspectors reviewed a self-revealed, Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a condition adverse to quality, identified several times between 1990 and 2019, to assure that safety-related butterfly valves in the essential service water system would not experience failures. Specifically, essential service water valve EFHV0066 became both decoupled from the motor operator and lost two of three pins holding the valve disc to the valve stem. These failures rendered EFHV0066, the train B ultimate heat sink cooling tower bypass valve, and train B of essential service water to be declared inoperable.			

  

Inadequate Turbine Startup Procedure Caused Elevated Main Generator Vibration			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000483/2019003-02 Open/Closed	Not Present Performance	71152
The inspectors reviewed a self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to establish, implement, and maintain a procedure for turbine startup and synchronization of the generator. Specifically, the general plant operating procedure for turbine startup and synchronization of the generator failed to include limits for high-pressure and low-pressure turbine differential expansion, resulting in elevated turbine vibrations and a manual trip of the main turbine.			

Failure to Establish Maintenance Procedures for Switchyard Maintenance and Modifications			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000483/2019003-03 Open/Closed	[H.12] - Avoid Complacency	71153
The inspectors reviewed a self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to establish, implement, and maintain procedures for switchyard maintenance and modifications. Specifically, an incorrect ground wire was installed on circuit breaker MDV55 which led to a switchyard transient and a loss of power to the vital 4160 V bus NB01. As a result, the associated emergency diesel generator automatically started to repower the vital loads including the train of spent fuel pool cooling in service at the time of the event.			

Failure to Implement Reactor Startup Procedures			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000483/2019003-04 Open/Closed	[H.2] - Field Presence	71153
The inspectors reviewed a self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to monitor all critical parameters during a reactor startup. Specifically, licensed operators failed to bypass the source range high flux trip when required by procedure. Further, senior licensed operators failed to focus on reactivity in their supervisory role. As a result, the reactor automatically tripped.			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000483/2019-001-00	Unplanned Loss of Switchyard Bus B Results in System Actuation	71153	Closed
LER	05000483/2019-002-00	Mode 4 Entry with Inoperable Auxiliary Building Pressure Boundary	71153	Closed
LER	05000483/2019-003-00	Reactor Trip Due to Source Range Hi-Flux	71153	Closed
URI	05000483/2018003-01	Failure to Perform 10 CFR 50.59 Evaluation for Compensatory Measures Associated with Stagnant, Inactive Loop	92701	Closed

## **PLANT STATUS**

Callaway operated 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 plant status activities described in IMC 2515 Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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 03.04) (1 Sample)

- (1) The inspectors evaluated readiness to cope with external flooding for the condensate storage tank valve house and tunnel including credited operator actions on August 30, 2019

### 71111.04Q - 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) Vital battery charger NK25 on July 3, 2019
- (2) Safety-related fans including FKG02B, SGN01A, and SGN01B on August 15, 2019
- (3) Emergency diesel generator A on September 5, 2019
- (4) Centrifugal charging pump A on September 24, 2019

### 71111.04S - Equipment Alignment

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

- (1) The inspectors evaluated system configuration during a complete walkdown of the train A control room air conditioning system on July 31, 2019

### 71111.05A - Fire Protection (Annual)

#### Annual Inspection (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated fire brigade performance on July 1, 2019

## 71111.05Q - Fire Protection

### Quarterly Inspection (IP Section 03.01) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Diesel generator building including diesel generator B room, fire area D-2, on July 29, 2019
- (2) Control building and communication corridor, lower cable spreading room, fire area C-21, on August 12, 2019
- (3) Control building, air conditioning room and upper cable spreading room, fire areas C-13 and C-22, on September 14, 2019
- (4) Switchyard including the control building, fire area S-15, on September 26, 2019

## 71111.06 - Flood Protection Measures

### Inspection Activities - Underground Cables (IP Section 02.02c.) (1 Sample)

- (1) The inspectors evaluated cable submergence protection in safety-related cable vaults MH01A and MH01B on September 5, 2019

## 71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

### Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

#### Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examination administered on August 1, 2019.

#### Annual Requalification Operating Tests

The inspectors evaluated the adequacy of the facility licensee's annual requalification operating test.

#### Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of the facility licensee in administering requalification operating tests required by 10 CFR 55.59(a)(2) and that the facility licensee is effectively evaluating their licensed operators for mastery of training objectives.

#### Requalification Examination Security

The inspectors evaluated the ability of the facility licensee to safeguard examination material, such that the examination is not compromised.



#### Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by the licensee and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

#### Operator License Conditions

The inspectors evaluated the licensee's program for ensuring that licensed operators meet the conditions of their licenses.

#### Control Room Simulator

The inspectors evaluated the adequacy of the facility licensee's control room simulator in modeling the actual plant, and for meeting the requirements contained in 10 CFR 55.46.

#### Problem Identification and Resolution

The inspectors evaluated the licensee's ability to identify and resolve problems associated with licensed operator performance.

### 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:
  - Emergency diesel generator A single train air fast start and 1 hour loaded run on September 4, 2019
  - Shift turnover and post-maintenance testing of safety injection pump B on September 11, 2019

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

- (1) The inspectors observed and evaluated licensed operator continuing training in the simulator on September 9, 2019

### 71111.12 - Maintenance Effectiveness

#### Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Control room air conditioning system on July 22, 2019
- (2) Vital batteries on September 13, 2019

### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

#### Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Emergent work risk management action due to degraded seals on auxiliary building doors during containment cooler maintenance on July 29, 2019
- (2) Emergent work risk management actions due to an unexpected engineered safety feature actuation system alarm and loss of indication on containment cooler A fan hand switch on August 8, 2019
- (3) Emergent work risk management actions during startup transformer cooling fan replacement on August 15, 2019
- (4) Emergent work risk management actions due to stator cooling water train A pump issues including spurious alarms on September 2, 2019

### 71111.15 - Operability Determinations and Functionality Assessments

#### Operability Determination or Functionality Assessment (IP Section 02.02) (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Containment cooler standpipe level control valve automatic closure issues, Condition Report 201904963, on July 29, 2019
- (2) Auxiliary building control room air conditioning door DSK15131, degraded seal, Condition Report 201903297, on August 2, 2019
- (3) Startup transformer XMR01, cooling fan motor failures, Condition Report 201905344, on August 8, 2019
- (4) Pressurizer power operated relief valve (PORV), block valve closure and operator burdens, Condition Report 201905928, on September 10, 2019

### 71111.18 - Plant Modifications

#### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary modification:

- (1) Emergency diesel generator train B lubrication oil heaters after temperature switch modification on July 17, 2019

### 71111.19 – Post-Maintenance Testing

#### Post-Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post-maintenance tests:

- (1) Service water to essential service water crosstie valves EFHV0025 and EFHV0039, on July 29, 2019
- (2) Battery charger NK25, for 125 Vdc groups 1 and 3 on August 1, 2019

- (3) Solid state protection system train B bypass switch S604 on August 23, 2019
- (4) Safety injection pump PEM01B, train B, after equipment outage on September 12, 2019
- (5) Emergency diesel generator and essential service water, train B, after equipment outage on September 21, 2019

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) Supplemental cooling fans surveillance test on July 15, 2019
- (2) Containment spray pump B surveillance test on September 20, 2019

#### Inservice Testing (IP Section 03.01) (2 Samples)

- (1) Containment spray pump train A and valve inservice testing on August 27, 2019
- (2) Component cooling water train B inservice test on August 14, 2019

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

- (1) Steam generator sample line isolation valve inservice test on August 19, 2019

#### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) Emergency boration pumps, FLEX-Boron-1 and FLEX-Boron-2, on August 7, 2019

#### 71114.01 - Exercise Evaluation

#### Inspection Review (IP Section 02.01-02.11) (1 Sample)

- (1) The inspectors evaluated the biennial emergency plan exercise conducted on August 13, 2019. The exercise scenario simulated leaking fuel pins, a failure of the reactor to trip on an automatic signal, a degraded core cooling safety function, and an escalating loss of coolant accident with a containment penetration seal failure.

#### 71114.06 - Drill Evaluation

#### Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) Emergency response organization drill, team 4, on September 19, 2019

#### 71114.08 - Exercise Evaluation Scenario Review

#### Inspection Review (IP Section 02.01 - 02.04) (1 Sample)

- (1) The inspectors reviewed and evaluated the proposed scenario for the biennial emergency plan exercise conducted on August 13, 2019

## **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, 2018, through June 30, 2019

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

- (1) July 1, 2018, through June 30, 2019

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

- (1) July 1, 2018, through June 30, 2019

#### EP01: Drill/Exercise Performance (IP Section 02.12) (1 Sample)

- (1) April 1, 2018, through June 30, 2019

#### EP02: ERO Drill Participation (IP Section 02.13) (1 Sample)

- (1) April 1, 2018, through June 30, 2019

#### EP03: Alert & Notification System Reliability (IP Section 02.14) (1 Sample)

- (1) April 1, 2018 through June 30, 2019

### 71152 - Problem Identification and Resolution

#### Annual Follow-up of Selected Issues (IP Section 02.03) (3 Samples)

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

- (1) Essential service water valve EFHV0066 cause evaluation for coupling failure on July 9, 2019
- (2) Reactor seal table seismic restraint bolting on August 3, 2019
- (3) Cause evaluation for the May 18, 2019 turbine trip on September 9, 2019

### 71153 – Follow-up of Events and Notices of Enforcement Discretion

#### Event Report (IP Section 03.02) (3 Samples)

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

- (1) LER 05000483/2019-001-00, Unplanned Loss of Switchyard Bus B Results in System Actuation (ADAMS Accession: ML19157A296), on April 17, 2019. The circumstances surrounding this LER are documented in the Inspection Results section of this report.

- (2) LER 05000483/2019-002-00, Mode 4 Entry with Inoperable Auxiliary Building Pressure Boundary (ADAMS Accession: ML19191A232), on May 11, 2019. The circumstances surrounding this LER are documented in the Inspection Results section of this report.
- (3) LER 05000483/2019-003-00, Reactor Trip due to Source Range Hi-Flux (ADAMS Accession: ML19196A093), on May 17, 2019. The circumstances surrounding this LER are documented in the Inspection Results section of this report.

## INSPECTION RESULTS

Failure to Promptly Identify and Correct Butterfly Valve Issues			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000483/2019003-01 Open/Closed	[P.5] - Operating Experience	71152
<p>The inspectors reviewed a self-revealed, Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a condition adverse to quality, identified several times between 1990 and 2019, to assure that safety-related butterfly valves in the essential service water system would not experience failures. Specifically, essential service water valve EFHV0066 became both decoupled from the motor operator and lost two of three pins holding the valve disc to the valve stem. These failures rendered EFHV0066, the train B ultimate heat sink cooling tower bypass valve, and train B of essential service water to be declared inoperable.</p> <p><u>Description:</u> On March 31, 2019, while the reactor was in Mode 1 and with a planned refueling outage starting the following day, operations personnel noted that essential service water was unexpectedly discharging over the ultimate heat sink cooling tower fill material. Licensee troubleshooting revealed that the ultimate heat sink cooling tower bypass butterfly valve for train B, EFHV0066, was partially closed although the valve indicated fully open in the control room. The licensee then identified that the valve itself was decoupled from the motor operator and declared train B of essential service water inoperable. After evaluating plant risk, including impact to the shutdown safety plan, the licensee proceeded with the planned reactor shutdown and plant cooldown to Mode 5. Due to reaching Mode 5 on April 2, 2019, the essential service water Technical Specification 3.7.8 was no longer applicable. During this time, the licensee discovered a second issue where two of the three pins that hold the valve disc to the valve stem were missing. The licensee effected repairs to recouple and re-pin EFHV0066 on April 3, 2019, and proceeded with the planned refueling outage. The licensee later replaced EFHV0066 with a new valve to allow forensic analysis of the failed component. The licensee initiated Condition Report 201901943 to document the failures of valve EFHV0066. This valve is a 30-inch Anchor Darling butterfly valve.</p> <p>The licensee reviewed computer data and identified that valve EFHV0066 had failed on March 30, 2019, based upon flow indication. The licensee formed a cause evaluation team and reviewed the possible causes for both disc pin and valve coupling failures. Ultimately, the licensee determined that vibrations from the flow of essential service water past the open butterfly valve caused both the pins and valve coupling to loosen to the point of failure. Specifically, the orientation of the butterfly valve, when open in the flow stream, can cause valve fluttering if set incorrectly and yield failures.</p>			

The inspectors, in parallel and independent of the licensee's review, performed a review of condition reports associated with EFHV0066 and associated operating experience. These reviews revealed several previous examples of internal operating experience where essential service water butterfly valves failed. Additionally, the licensee had several precursor issues that may have indicated a problem with excessive vibrations of the butterfly valve. A summary of these issues is included in the table below.

<b>Date</b>	<b>Vibrations</b>	<b>Coupling Issue</b>	<b>Summary of essential service water butterfly valve issues</b>	<b>Condition Report Numbers</b>
8/9/1990		X	EFHV0037 excessive valve leakage, coupling found slipped off. Corrective action to revise 18-month preventative maintenance (PM) to check coupling bolts was not completed.	199001400
10/25/1993		X	EFHV0026 found decoupled from motor operator during packing replacement.	199301554
4/5/2013	X	X	EFHV0024 excessive valve leakage, coupling bolts found loose. Corrective action to check coupling bolt torque in next six year PM for similar essential service water butterfly valves including EFHV0066. Condition report notes failure in 1990 to take corrective action.	201302358 201302424
4/9/2015		X	EFHV0025 gap identified between valve shaft to motor operator where coupling connects. Remained coupled.	201502077
12/16/2016			EFHV0066 valve position indication question by NRC on differences in open position compared to EFHV0065.	201609281
11/11/2017	X		EFHV0066 valve fluttering/rattle observed.	201706617
5/2/2018			EFHV0066 packing gland nuts found loose.	201802212
6/28/2018			EFHV0066 packing gland nut found loose again.	201803252
3/31/2019	X	X	EFHV0066 failure due to decoupling. Six year PM for coupling bolt torque checks was due later this year (2019), but not yet completed at the time of failure.	201901943

Further, the licensee had not yet incorporated industry guidance, published in 2003, on how to throttle butterfly valves to minimize flow induced disc vibration per EPRI TR 1007908, "Large Butterfly Valve Maintenance Guide."

The inspectors reviewed the licensee's guidance for corrective action timeliness. In corrective action Procedure APA-ZZ-00500, Appendix 14, "Adverse Condition – ADCN 3," step 4.5 defines timely:

Timely – Corrective action completion time is prompt. Interim measures needed until final Corrective Actions are complete. Due dates should be based on resources available, remedial actions taken to date, assessment of impact on plant operations, likelihood or risk of recurrence, and significance of recurrence.

The inspectors noted that the coupling bolt torque checks could have identified loose couplings and flow induced vibrations prior to the 2019 failure. In the case of EFHV0066, coupling bolt torque checks were not performed prior to failure although the first example of a coupling failure occurred 29 years earlier. Instead of taking positive action following the 2013 failure to assign a corrective action to inspect and torque the couplings of all affected valves, the licensee chose to modify the preventive maintenance (PM) procedure to check the coupling torque. In doing so, the licensee did not control the timeliness of the action, since the timing of completing the torqueing was based on the existing PM schedule.

The inspectors concluded the licensee failed to promptly identify and correct a condition adverse to quality, identified several times between 1990 and 2019, to assure that safety-related butterfly valves in the essential service water system would not experience failures. Specifically, essential service water valve EFHV0066 became both decoupled from the motor operator and lost two of three pins holding the valve disc to the valve stem. These failures rendered EFHV0066, the train B ultimate heat sink cooling tower bypass valve, unable to be operated from the control room. As a result, the valve failure caused train B of essential service water to be declared inoperable, involved an unplanned equipment outage of 69 hours for repairs, and required accident analysis calculations to be reperformed with as-found conditions to assure the requirements were met for ultimate heat sink performance.

Corrective Actions: The licensee repaired EFHV0066 for the planned refueling outage, replaced the valve later in the refueling outage, performed an extent of condition review of similar butterfly valves, and entered issues into the corrective action program.

Corrective Action References: Condition Report 20190194.

Performance Assessment:

Performance Deficiency: The failure to promptly identify and correct a condition adverse to quality, identified several times between 1990 and 2019, to assure that safety-related butterfly valves in the essential service water system would not experience failures was a performance deficiency. Specifically, the licensee failed to check for loss of torque on coupling bolts for safety-related butterfly valves.

Screening: The inspectors determined the performance deficiency was more than minor, and therefore a finding, because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, essential service water valve EFHV0066 became both decoupled from the motor operator and lost two of three pins holding the valve disc to the valve stem. These failures rendered EFHV0066, the train B ultimate heat sink cooling tower bypass valve, unable to be operated from the control room. As a result, the valve failure caused train B of essential

service water to be declared inoperable, involved an unplanned equipment outage of 69 hours for repairs, and required accident analysis calculations to be reperformed with as-found conditions to assure the requirements were met for ultimate heat sink performance.

**Significance:** The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) because (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. Specifically, the time of valve failure is known based upon flow instrumentation and documented examples of previous successful operation. At the time of discovery, the licensee was preparing to shut down for a planned refueling outage and exited the Mode of applicability for Technical Specification 3.7.8 after 37 hours of inoperability. After identifying the time of failure in past operability reviews, the total duration of the equipment being out of service was 69 hours which is less than the associated technical specification allowed outage time. Further, the licensee performed engineering analysis of the as-found conditions, including environmental factors at the time of failure, and determined the ultimate heat sink thermal performance would have been met.

**Cross-Cutting Aspect:** The finding had a cross-cutting aspect in the area of problem identification and resolution associated with operating experience because the licensee failed to systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner [P.5]. Specifically, the licensee had internal operating experience that discussed the decoupling failure mechanism and did not incorporate that knowledge into their 2017 evaluation of vibration on EFHV0066 or the 2018 evaluation of loose packing nuts on EFHV0066.

**Enforcement:**

**Violation:** Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, from November 11, 2017, to March 31, 2019, the licensee failed to promptly identify and correct a condition adverse to quality to assure that safety-related butterfly valves in the essential service water system remained operable. Specifically, untimely corrective actions for essential service water valve EFHV0066 allowed the valve to become decoupled from the motor operator. These failures rendered EFHV0066, the train B ultimate heat sink cooling tower bypass valve, unable to be operated from the control room. As a result, the valve failure caused train B of essential service water to be declared inoperable, involved an unplanned equipment outage of 69 hours for repairs, and required accident analysis calculations to be reperformed with as-found conditions to assure the requirements were met for ultimate heat sink performance.

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



Inadequate Turbine Startup Procedure Caused Elevated Main Generator Vibration			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000483/2019003-02 Open/Closed	Not Present Performance	71152
<p>The inspectors reviewed a self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to establish, implement, and maintain a procedure for turbine startup and synchronization of the generator. Specifically, the general plant operating procedure for turbine startup and synchronization of the generator failed to include limits for high-pressure and low-pressure turbine differential expansion, resulting in elevated turbine vibrations and a manual trip of the main turbine.</p> <p><u>Description:</u> On May 18, 2019, while performing the first startup of the turbine generator following replacement of the turbine control system in accordance with Procedure OTN-AC-0001, "Main Turbine and Generator Systems," the licensee noted elevated vibrations from the main turbine following synchronization of the main generator with the grid. The licensee entered Procedure OTO-AC-00002, Revision 28, "Turbine Vibration," and reduced turbine load in an attempt to lower the turbine vibrations. The licensee then manually tripped the turbine and transitioned to Procedure OTO-AC-00001, Revision 25, "Turbine Trip Below P-9," when the turbine vibrations continued to rise following the turbine load reduction.</p> <p>The manual turbine trip was initiated from 19 percent reactor power and did not cause a reactor trip, by design, since reactor power was below the setpoint for the turbine trip - reactor trip interlock (P-9). This allows the unit to withstand a turbine trip without a direct reactor trip if it is operating below 50 percent power since rod control in conjunction with steam dumps can accommodate the transient. Following the turbine trip, all four atmospheric steam dumps opened as expected and reactor power stabilized at approximately 10 percent power. The licensee commenced plant stabilization and recovery which included performing a Procedure APA-ZZ-00542, Revision 21, "Event Review and Post Transient Evaluation."</p> <p>During the event review, the licensee noted that the new automatic main turbine warmup was completed in less time than when previously performed manually, but differential expansion was also significantly lower than previous turbine startups. During a turbine startup, the turbine components will initially expand as the steam is admitted through the steam chest. Once the steam begins to roll the turbine, the cooling action of the steam will then result in the turbine train contracting. This expansion and contraction is measured with differential expansion probes that provide an indication in mils. As the turbine expands and contracts, the various turbine components can experience thermally-induced rubbing which will lead to elevated vibration levels.</p> <p>During the subsequent startup, the licensee monitored turbine differential expansion as steam was admitted to the turbine. The licensee utilized exhaust hood spray, throttling flow to the exhaust hood to maintain turbine differential expansion to a range seen on previous startups. The turbine startup was able to continue without any further issues after the expected turbine expansion levels were established.</p> <p>The inspectors' review of the elevated vibration and manual turbine trip determined that Procedure OTN-AC-00001, "Main Turbine and Generator Systems," utilized for turbine</p>			

startup was inadequate. Specifically, the turbine startup procedure failed to identify an acceptance band for turbine differential expansion required to roll the main turbine with steam or direct action to control the turbine differential expansion in band by throttling the exhaust hood spray.

Corrective Actions: The licensee stabilized the plant, performed a post-event review and entered the issue into the corrective action program.

Corrective Action References: Condition Report 201903832.

Performance Assessment:

Performance Deficiency: The failure to establish, implement, and maintain a procedure for turbine startup and synchronization of the generator was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor, and therefore a finding, because it adversely affected the procedure quality attribute of the Initiating Events Cornerstone and its objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate turbine startup procedure resulted in elevated turbine vibrations, a manual trip of the main turbine, and actuation of atmospheric steam dumps.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, "Initiating Events Screening Questions," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) since the finding did not cause a reactor trip and did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

Cross-Cutting Aspect: None. The inspectors determined there was no cross-cutting aspect because the last significant procedure review occurred in 2014, more than three years before the event, and does not reflect present licensee performance.

Enforcement:

Violation: Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 2.e, requires that turbine startup and synchronization of the generator be covered by written procedures.

Contrary to the above, prior to May 18, 2019, the licensee failed to establish, implement and maintain the procedure for turbine startup and synchronization of the generator. Specifically, the turbine startup and synchronization of the generator procedure failed to identify turbine differential expansion limits for rolling the turbine with steam and the use of turbine exhaust hood spray to maintain the turbine differential expansion in the required band.

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

Failure to Establish Maintenance Procedures for Switchyard Maintenance and Modifications			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000483/2019003-03 Open/Closed	[H.12] - Avoid Complacency	71153
<p>The inspectors reviewed a self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to establish, implement, and maintain procedures for switchyard maintenance and modifications. Specifically, an incorrect ground wire was installed on circuit breaker MDV55 which led to a switchyard transient and a loss of power to the vital 4160 V bus NB01. As a result, the associated emergency diesel generator automatically started to repower the vital loads including the train of spent fuel pool cooling in service at the time of the event.</p> <p><u>Description:</u> On April 17, 2019, while the reactor was defueled (in no Mode) with no irradiated fuel movements in progress, the licensee experienced a switchyard transient that resulted in the loss of power to the vital 4160 V bus NB01. Specifically, all core fuel assemblies had been moved to the fuel pool earlier in the refueling outage.</p> <p>At the time of the event, the licensee was aligning the switchyard for main transformer backfeed to support maintenance. When switchyard circuit breaker MDV53 was shut, a fault was detected on current transformers that resulted in the de-energization of the train B 365 kV switchyard bus. Due to the switchyard alignment at the time of the event, the transformer providing offsite power to vital 4160 kV bus NB01 was also lost. By design, the loss of voltage to vital bus NB01 was detected, the associated train A emergency diesel generator automatically started, and safety-related shutdown loads were automatically sequenced on to repowered bus NB01. These loads included the spent fuel pool cooling pump, one essential service water pumps, and one component cooling water pumps.</p> <p>The licensee responded to the event with off-normal Procedure OTO-NB-00001, "Loss of Power to NB01," and previously running loads were restored within 12 minutes. In this period, the spent fuel pool increased in temperature by 1°F. The licensee restored offsite power to bus NB01 within two hours and reported the actuation of the diesel generator to the NRC under event notification EN 54005. This event was also reported as Licensee Event Report (LER) 05000483/2019-001-00 (ADAMS ML19157A296). The licensee initiated Condition Report 201902606 to document the transient and pursue corrective actions.</p> <p>During the event review, the licensee determined there was an incorrect ground wire on circuit breaker MDV55 installed during the fall of 2017. The cause of this incorrect ground wire was ineffective management of a scope change for protective relays. Specifically, the requirement for protective relays changed during the design process and the ground jumper was not removed from the schematic although its associated relay was removed from the drawing. As a result, the ground wire was installed per the incorrect drawing.</p> <p>Since this latent design error was installed, the licensee had not placed the switchyard circuit breakers in a configuration that would have challenged the fault relaying system. Due to the unique power alignment of the switchyard during main transformer backfeed, this additional ground wire now provided a current flow path to the protective relays that detect significant electrical faults. When the neighboring circuit breaker MDV53 was shut during the main transformer backfeed attempt, the electrical flow path through the current transformer</p>			

activated the protective relays to clear all loads on the train B 365 kV switchyard bus due to a falsely detected flashover event.

The inspectors independently reviewed the cause evaluation, the design, and condition report history for the switchyard circuit breakers. The inspectors noted that circuit breaker design, modifications, and maintenance in the non-safety switchyard is performed by off-site personnel from Ameren Transmission. The licensee, however, is required to review and approve the design, modifications, and maintenance of these circuit breakers per Procedure APA-ZZ-00323, "Configuration Management Process." Specifically, section 3 of Procedure APA-ZZ-00323 states staff, "identifies configuration discrepancies through established processes...ensures administrative controls are in place and followed to satisfy plant design and licensing basis requirements concerning physical plant and configuration documentation."

The inspectors concluded the licensee failed to establish, implement, and maintain procedures for switchyard maintenance and modifications. Specifically, the licensee failed to identify that an incorrect ground wire was installed on circuit breaker MDV55 which led to a switchyard transient and a loss of power to the vital 4160 kV bus NB01. As a result, the associated emergency diesel generator automatically started to repower the vital loads including the train of spent fuel pool cooling in service at the time of the event.

Corrective Actions: The licensee restored vital loads to NB01 via offsite power, performed a walk-down of switchyard circuit breakers, reviewed design drawings for switchyard circuit breakers, and entered issues into the corrective action program.

Corrective Action References: Condition Report 201902606.

Performance Assessment:

Performance Deficiency: The failure to establish, implement, and maintain procedures for switchyard maintenance and modifications was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor, and therefore a finding, because it adversely affected the design control attribute of the Initiating Events Cornerstone and its objective to limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, an incorrect ground wire was installed on circuit breaker MDV55 which led to a switchyard transient and a loss of power to the vital 4160 kV bus NB01.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, "Initiating Events Screening Questions," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) since the finding involved the partial loss of a support system that contributed to the likelihood of, or caused, an initiating event, but did not affect mitigation equipment. Specifically, with the reactor defueled and in no Mode, shutdown cooling was not required and IMC 0609 Appendix G, "Shutdown Operations Significance Determination Process," is not applicable. Although the switchyard transient did lead to a loss of power to the vital 4160 kV bus NB01, mitigating equipment remained available since the emergency diesel generator automatically restored power to vital loads.

Cross-Cutting Aspect: Individuals implement appropriate error reduction tools. The finding had a cross-cutting aspect in the area of human performance associated with avoiding complacency because the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes including implementing appropriate error reduction tools [H.12]. Specifically, the licensee's review of the off-site design was not thorough enough to recognize the latent issue in the switchyard controls.

Enforcement:

Violation: Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 9.a of Appendix A to Regulatory Guide 1.33, Revision 2, requires maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. The licensee established Procedure APA-ZZ-00323, "Configuration Management Process," in part, to meet the regulatory requirement.

Contrary to the above, from fall of 2017 until April 17, 2019, the licensee failed to establish, implement, and maintain procedures for preventative maintenance that can affect the performance of safety-related equipment. As a result, an incorrect ground wire was installed on circuit breaker MDV55 which led to a switchyard transient, a loss of power to the vital 4160 kV bus NB01, and required the emergency diesel generator to automatically restore power to the bus.

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

Failure to Implement Reactor Startup Procedures

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000483/2019003-04 Open/Closed	[H.2] - Field Presence	71153

The inspectors reviewed a self-revealed, Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to monitor all critical parameters during a reactor startup. Specifically, licensed operators failed to bypass the source range high flux trip when required by procedure. Further, senior licensed operators failed to focus on reactivity in their supervisory role. As a result, the reactor automatically tripped.

Description: On May 16, 2019, while the reactor was in Mode 2 during startup, the licensee experienced an automatic reactor trip due to source range high flux.

At the time of the event, the licensee was monitoring the overlap of indicated reactor power from the source range into the intermediate range per Procedure OTG-ZZ-00002, "Reactor Startup – IPTE." The team consisted of two reactor operators, two senior reactor operators, a shift manager, and management oversight for the infrequently performed test or evolution (IPTE). The next required steps, per Procedure OTG-ZZ-00002, involved monitoring for adequate overlap of nuclear instrumentation and blocking of the source range high flux trip once the P-6 permissive lights were in. This permissive allows the intentional

blocking of source range scram signals during a planned reactor startup once indication exists in the intermediate range.

The licensed reactor operators were withdrawing control rods and monitoring the trend of the source range and intermediate range including startup rate. The licensed senior reactor operator, serving as control room supervisor, shifted his focus from reactivity management to an unrelated alarm associated with the boron dilution monitoring system (BDMS) that came in during this time. The additional senior reactor operator was not utilized to resolve the BDMS alarm. After the senior reactor operator discussed the BDMS issue with the shift manager, the IPTE manager communicated the proximity to the source range high flux trip to the shift manager. The control room supervisor directed the reactor operator to bypass the source range high flux trip but was they were unable to complete all actions prior to the automatic reactor trip occurring.

The licensee responded to the scram with Procedure E-0, "Reactor Trip or Safety Injection," and stabilized the plant in Mode 3. The licensee reported the valid actuation of the reactor protection system to the NRC under Event Notification EN 54069 and Licensee Event Report 05000483/2019-003-00 (ADAMS ML19196A093). The licensee initiated Condition Report 201903787 to document the reactor trip and pursue corrective actions.

During the event review, the licensee determined the licensed operators did not adequately monitor reactivity. Specifically, the reactor operators were overly focused on trends instead of the absolute value of reactor power and believed they had additional time to complete the process of bypassing the source range high flux trip. The control room supervisor and shift manager improperly shifted their focus to a non-urgent alarm on BDMS and did not provide adequate oversight of reactivity.

The inspectors were present in the control room during the trip and independently reviewed the immediate post-trip actions. Later, the inspectors independently reviewed the key parameters of the event, the human performance aspects, and the condition reports for the reactor trip.

The inspectors reviewed reactor startup Procedure OTG-ZZ-00002 and noted Attachment 2 states, "Prior to source range count exceeding  $5 \times 10^4$  cps, block the source range high flux reactor trip." Procedure OTG-ZZ-00002, step 3.1.9 states, "designate a reactivity management [senior reactor operator] to maintain oversight of reactor operations." This role is further defined in Procedure ODP-ZZ-00001, "Operations Department Code of Conduct," in step 3.6 which states, "during periods of reactivity management or significant plant evolutions, the [reactivity management senior reactor operator] focus must be on reactivity...refrain from conducting concurrent tasks."

The inspectors concluded the licensee failed to implement procedures for reactor startup. Specifically, licensed operators failed to bypass the source range high flux trip when required by procedure. Further, senior licensed operators failed to focus on reactivity in their supervisory role. As a result, the reactor automatically tripped due to a human performance error.

Corrective Actions: The licensee stabilized the plant in Mode 3, relieved the on-watch operators to perform an event review, and entered these issues into the corrective action program.

Corrective Action References: Condition Report 201903787.

Performance Assessment:

Performance Deficiency: The failure to monitor all critical parameters during a reactor startup was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor, and therefore a finding, because it adversely affected the human performance attribute of the Initiating Events Cornerstone and its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, licensed operators failed to bypass the source range high flux trip when required by procedure. Further, licensed operators failed to focus on reactivity in their supervisory role. As a result, the reactor automatically tripped due to a human performance error.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter (IMC) 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, "Initiating Events Screening Questions," dated June 19, 2012. The inspectors determined that the finding was of very low safety significance (Green) since the finding caused a reactor trip but not the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

Cross-Cutting Aspect: H.2 - Field Presence: Leaders are commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Deviations from standards and expectations are corrected promptly. Senior managers ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. The finding had a cross-cutting aspect in the area of human performance associated with field presence because licensee leaders failed to promptly correct deviations from standards and expectations including ensuring supervisory and management oversight of work activities [H.2]. Specifically, the senior reactor operators and management did not promptly correct the team and focus on reactivity management during reactor startup.

Enforcement:

Violation: Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 2.b of Appendix A to Regulatory Guide 1.33, Revision 2, requires general plant operating procedures for hot standby to minimum load (nuclear start-up). The licensee established Procedure OTG-ZZ-00002, "Reactor Startup - IPTE," in part, to meet the regulatory requirement. Steps 5.1.17 and 5.1.31 of OTG-ZZ-00002 require monitoring nuclear instruments and blocking the source range high flux reactor trip above the P-6 permissive.

Contrary to the above, on May 16, 2019, the licensee failed to implement procedures for reactor startup. Specifically, licensed operators failed to monitor all critical parameters (i.e., nuclear instruments) during a reactor startup and failed to bypass the source range high flux trip when required by procedure. Further, senior licensed operators failed to focus on reactivity in their supervisory role. As a result, the reactor automatically tripped.

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

Licensee-Identified Non-Cited Violation - Auxiliary Building Door Open During Mode Change		71153
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.		
<p>Violation: Technical Specification 3.7.13, "Emergency Exhaust System (EES)," which requires two emergency exhaust system trains to be operable and an operable auxiliary building boundary, is applicable in Modes 1, 2, 3, and 4. Technical Specification 3.0.4, "Limiting Condition for Operation Applicability," requires, in part, that when an LCO is not met, entry into a mode or other specified condition in the applicability shall only be made when the associated actions to be entered permit continued operation in the mode for an unlimited period of time or after the performance of a risk assessment.</p> <p>Contrary to the above, from May 11-12, 2019, with LCO 3.7.13 not met, the licensee entered Mode 4 from Mode 5. Specifically, Door DSK 15041, serving as part of the auxiliary building ventilation boundary for the emergency exhaust system, was left open during mode ascension for 12.9 hours. This non-cited violation is associated with Licensee Event Report (LER) 05000483/2019-002-00 (ADAMS ML19191A232).</p> <p>Significance/Severity Level: The failure to comply with Technical Specification 3.0.4 prior to entering the mode of applicability for the emergency exhaust system was a performance deficiency. The inspectors determined the performance deficiency was more than minor, and therefore a finding, because it adversely affected the SSC and barrier performance attribute of the Barrier Integrity Cornerstone and its objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, Door DSK 15041 was left open between the auxiliary building and the radioactive material storage building during mode ascension to Mode 4 where the emergency exhaust system is required to be operable. This door served as part of the auxiliary building ventilation boundary for the emergency exhaust system and is assumed to be shut for accident analysis calculations. As a result, the station did not have an operable auxiliary building boundary, had not performed a risk assessment, and required as-found testing and calculations to demonstrate requirements were met to limit the spread of radioactive materials in a postulated event. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 3, "Barrier Integrity Screening Questions," dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for the control room, auxiliary building, or spent fuel pool. Specifically, leaving Door DSK 15041 open only affected the radiological barrier function for the auxiliary building.</p> <p>Corrective Action References: Condition Report 201903596.</p>		
Unresolved Item (Closed)	Failure to Perform 10 CFR 50.59 Evaluation for Compensatory Measures Associated with Stagnant, Inactive Loop URI 05000483/2018003-01	92701
Description: The inspectors identified an unresolved issue related to implementation of 10 CFR 50.59, "Changes, Tests, and Experiments," for the licensee's failure to perform an		



adequate evaluation for compensatory measures for a stagnant, inactive loop. As part of the compensatory measures to support atmospheric dump valve/turbine-driven auxiliary feed pump operability due to an issue identified for natural circulation cooldown with a faulted steam generator (i.e., inactive loop), a reduction in the Technical Specification 3.4.16 dose equivalent iodine (DEI) limit (from 1 $\mu$ Ci/gm to 0.4 $\mu$ Ci/gm) was imposed without a 10 CFR 50.59 evaluation and/or license amendment. Specifically, the licensee did not consider the compensatory measure of reducing Technical Specification 3.4.16 limits on DEI-131 as a change to technical specifications.

It was determined that the issue was not related to 10 CFR 50.59, because it would screen out and direct the licensee to 10 CFR 50.90, since the compensatory measures resulted in a nonconservative technical specification. NRC Administrative Letter 98-10, dated December 29, 1998, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety," states, in part, "Title 10 of the Code of Federal Regulations, Section 50.36, "Technical Specifications," requires that each technical specification limiting condition for operation (LCO) specify, at a minimum, the lowest functional capability or performance level of equipment required for the safe operation of the facility.

Generic Letter (GL) 91-18, Revision 1, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," provides guidance to licensees on the type and time frame of any required corrective action. As stated in the GL, whenever degraded or nonconforming conditions are discovered, 10 CFR Part 50, Appendix B, requires prompt corrective action to correct or resolve the condition. In the case of a deficient technical specification, this includes the evaluation of compensatory measures, such as administrative controls, in accordance with 10 CFR 50.59 and prompt actions to correct the technical specification. If the licensee does not resolve the degraded or nonconforming condition, the staff would conclude that corrective action has been inadequate and would consider taking enforcement action. In summary, the discovery of an improper or inadequate technical specification value or required action is considered a degraded or nonconforming condition as defined in GL 91-18. Imposing administrative controls in response to an improper or inadequate technical specification is considered an acceptable short-term corrective action. The staff expects that, following the imposition of administrative controls, an amendment to the technical specification, with appropriate justification and schedule, will be submitted in a timely fashion. Once any amendment correcting the technical specification is approved, the licensee must update the final safety analysis report, as necessary, to comply with 10 CFR 50.71(e). The compensatory measures implemented by the licensee were short term corrective actions and the licensee upgraded the power operated relief valves and modified procedures to allow their use to depressurize the plant in the event of natural circulation cooldown with a faulted steam generator. These actions allowed the licensee to restore Technical Specification 3.4.16 DEI limit back to the 1 $\mu$ Ci/gm limit. This issue was closed with no performance deficiency.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On July 15, 2019, the inspectors presented the Emergency Preparedness Scenario Discussion inspection results to G. Rausch, Manager, Emergency Preparedness and other members of the licensee staff.

- On September 12, 2019, the inspectors presented the 71111.11 Biennial Requalification inspection results to D. Farnsworth, Director, Nuclear Operations and other members of the licensee staff.
- On September 19, 2019, the inspectors presented the Emergency Preparedness Exercise inspection results to F. Diya, Senior Vice President and Chief Nuclear Officer, and other members of the licensee staff.
- On October 2, 2019, the inspectors presented the Resident Inspector inspection results to T. Herrmann, Site Vice President, and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	Condition Reports	201704807, 201805233, 201805781, 201806234, 201902640, 201903877, 201904608	
71111.01	Miscellaneous	E-23AP02	Condensate Transfer and Storage - Alarms and Instrumentation Schematic	2
71111.01	Miscellaneous	M-22AP01	Piping and Instrumentation Diagram - Condensate Storage and Transfer System - FSAR Figure 9.2-12	32
71111.01	Procedures	ITL-AP-000L4	Loop Level, Condensate Storage Tank Level	11
71111.04Q	Corrective Action Documents	Condition Reports	200303221, 200803108, 200901896, 201602989, 201607971, 201701159, 201706923, 201706998, 201707612, 201800235, 201800442, 201805430, 201904669	
71111.04Q	Drawings	M-11GN01	Piping and Instrumentation Diagram - Containment Cooling System - FSAR Figure 9.4-6, Sheet 1	28
71111.04Q	Miscellaneous	JE-13	Emergency Fuel Oil Storage and Day Tank Volume Requirements	0
71111.04Q	Miscellaneous	M-EF-51	Minimum Essential Service Water Flow to the Containment Coolers Determine the Minimum Essential Service Water Flow Through the Containment Coolers Required to Remove the Design	0
71111.04Q	Miscellaneous	ZZ-179	Plant AC Bus Load List	9
71111.04Q	Procedures	APA-ZZ-00304	Control of Callaway Equipment List	43
71111.04Q	Procedures	EDP-ZZ-07001	Cable Management Program	4
71111.04Q	Procedures	OTN-GN-00001	Containment Cooling and RDM Cooling	30
71111.04Q	Procedures	OTN-NK-00001, Addendum 1	125 Vdc Bus NK01 and Distribution System	5
71111.04S	Corrective Action Documents	Condition Reports	201803896, 291803913, 20185142	
71111.04S	Drawings	M-22EF02	Piping and Instrumentation Diagram - Essential Service Water System - FSAR Figure 9.2-2, Sheet 2	
71111.04S	Miscellaneous	Job 18000062	Implement MP 17-0006 Essential Service Water Hammer Mitigation at SGK04A	
71111.04S	Procedures	APA-ZZ-00304	Control of Callaway Equipment List	43

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04S	Procedures	OTO-SA-00001	Engineered Safety Features Actuation Signal Verification and Restoration	42
71111.05Q	Corrective Action Documents	Condition Reports	201904602	
71111.05Q	Miscellaneous		Fire Pre-plan Manual	38
71111.05Q	Miscellaneous	T66.1000S	Fire Drill	
71111.05Q	Procedures	APA-ZZ-00700	Fire Protection Program	256
71111.05Q	Procedures	EIP-ZZ-00226	Fire Response Procedure for Callaway Plant	20
71111.05Q	Procedures	ODP-ZZ-00002, Appendix 3	Risk Management Actions for Fire Risk Systems and Components	3
71111.06	Corrective Action Documents	Condition Reports	201804913, 201806566, 201900768	
71111.06	Miscellaneous	Preventative Maintenance	1005833, 1005834	
71111.06	Work Orders		16503071, 16502102, 16506165, 17513066	
71111.11B	Corrective Action Documents	Condition Reports	201705360, 201705784, 201706686, 201707562, 201800507, 201801750, 201806934, 201900788, 201900798, 201902095, 201902913, 201903787, 201904579	
71111.11B	Miscellaneous		Reactivation Packages 2018-2019	0
71111.11B	Miscellaneous		Cycle 23 Simulator Test Package	0
71111.11B	Miscellaneous		Simulator Discrepancy Report	7/10/2019
71111.11B	Miscellaneous		List of Simulator Modifications Completed	7/10/2019
71111.11B	Miscellaneous		Cycle 24 Transient test 2, Simultaneous trip of all feedwater pumps	7/15/2019
71111.11B	Miscellaneous		Cycle 24 Transient test 3, Simultaneous closure of all main steam isolation valves	7/15/2019
71111.11B	Miscellaneous		Cycle Transient test 11, Maximum design load rejection	7/15/2019
71111.11B	Miscellaneous		Cycle 24 Steady State tests for medium power test	7/15/2019
71111.11B	Miscellaneous		Licensee Watch Hours as RO 7/1/18 – 7/31/18	
71111.11B	Miscellaneous		Licensee Watch Hours as BOP 7/1/18 – 7/31/18	
71111.11B	Miscellaneous		Licensee Watch Hours as SM 7/1/18 – 7/31/18	
71111.11B	Miscellaneous		Licensee Watch Hours as CRS 7/1/18 – 7/31/18	

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71111.11B	Miscellaneous		2019 LO Exam 2 RO	
71111.11B	Miscellaneous		2019 LO Exam 2 SRO	
71111.11B	Miscellaneous		List of Licensed Operators by Crew	07/01/2019
71111.11B	Miscellaneous		List of LOR Qualified Evaluators	07/01/2019
71111.11B	Miscellaneous		List of OE Incorporated into the LOR Program	07/10/2019
71111.11B	Miscellaneous		List of LOCT Training Based on Operator Performance	07/01/2019
71111.11B	Miscellaneous		Simulator Expert Review Group Meeting Minutes	9/27/2018
71111.11B	Miscellaneous		Simulator Expert Review Group Meeting Minutes	9/27/2017
71111.11B	Miscellaneous		Simulator Expert Review Group Meeting Minutes	6/28/2018
71111.11B	Miscellaneous		Simulator Oversight Group Meeting Minutes	9/28/2017
71111.11B	Miscellaneous		Simulator Operating Group Meeting Minutes	9/26/2018
71111.11B	Miscellaneous		Simulator Operating Group Meeting Minutes	6/29/2018
71111.11B	Miscellaneous		Simulator Operating Group Meeting Minutes	11/28/2018
71111.11B	Miscellaneous	AC-RO-S-004	Job Performance Measure	4/22/19
71111.11B	Miscellaneous	AC-RO-S-005	Job Performance Measure	4/22/19
71111.11B	Miscellaneous	Admin1-RO-S&O-005	Job Performance Measure	4/25/19
71111.11B	Miscellaneous	Admin4-SRO-S&O-015(TC)	Job Performance Measure	3/28/19
71111.11B	Miscellaneous	AUCA 20190004	Root Cause Analysis for CR 201903787 - Reactor Trip due to Source Range Hi-Flux	6/19/19
71111.11B	Miscellaneous	DS-04	Dynamic Simulator Exam Scenario	20190429
71111.11B	Miscellaneous	DS-06	Dynamic Simulator Exam Scenario	20190501
71111.11B	Miscellaneous	DS-21	Dynamic Simulator Exam Scenario	20190503
71111.11B	Miscellaneous	DS-22	Dynamic Simulator Exam Scenario	20190430
71111.11B	Miscellaneous	EOP-NLO-P-007(A)	Job Performance Measure	3/25/19
71111.11B	Miscellaneous	EOP-RO-S-014(A)	Job Performance Measure	4/3/19
71111.11B	Miscellaneous	EOP-RO-S-023(A)	Job Performance Measure	4/24/19
71111.11B	Miscellaneous	EOP-RO-S-023(A)	Job Performance Measure	4/24/19

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71111.11B	Miscellaneous	EP-NLO-R-001	Job Performance Measure	3/22/19
71111.11B	Miscellaneous	EP-NLO-R-002	Job Performance Measure	4/1/19
71111.11B	Miscellaneous	NE-NLO-P-001(A)	Job Performance Measure	4/1/19
71111.11B	Miscellaneous	T210.0006	Miscellaneous Licensed Operator Continuing Training Evaluation Summary Reports	0
71111.11B	Procedures	APA-ZZ-00912	Callaway Energy Center Medical Certification Program	21
71111.11B	Procedures	APA-ZZ-00912, Appendix A	Medical Certification Fire Brigade & Licensed Operators Exam Elements and Scheduling Frequency	7
71111.11B	Procedures	CTM-EXAM	Examination Control and Security	11
71111.11B	Procedures	CTM-OPS	Operations Training Programs	63
71111.11B	Procedures	CTM-OPS, Addendum 9	Exam Information	11
71111.11B	Procedures	CTM-SAT	Systematic Approach to Training	63
71111.11B	Procedures	CTM-SAT, Addendum M	Evaluations	6
71111.11B	Procedures	CTM-SAT, Addendum O	Just-in-Time-Training	4
71111.11B	Procedures	CTM-SAT, Addendum K	Remediation	5
71111.11B	Procedures	CTM-SAT, Addendum P	Rescinding and Restoring Qualifications	7
71111.11B	Procedures	TDP-IS-00001	Simulator Operation and Maintenance	15
71111.11B	Procedures	TDP-ZZ-00019	NRC License Examination Security and Integrity	22
71111.11B	Procedures	TDP-ZZ-00019, Appendix Z	Simulator Security Guidelines	45
71111.11Q	Corrective Action Documents	Condition Reports	201104071, 201407121, 201802218	
71111.11Q	Miscellaneous	T61.0810 8	LOCT Guide	Various
71111.11Q	Miscellaneous	T61.08108	LOCT Training Guide	
71111.11Q	Procedures	ODP-ZZ-00001	Operations Department - Code of Conduct	106
71111.11Q	Procedures	ODP-ZZ-00001	Operations Department - Code of Conduct	104
71111.11Q	Procedures	OSP-EM-P001B	Safety Injection Train B Inservice Test - Group B	51

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71111.11Q	Procedures	OSP-NE-0024B	Standby Diesel Generator B 24 Hour Run and Hot Restart Test	59
71111.11Q	Work Orders		01237782	
71111.12	Corrective Action Documents	Condition Reports	201009936, 201501242, 201601339, 201607870, 201801292, 201804823, 201902047, 201903004, 201904821, 201904950, 201905435	
71111.12	Drawings	M-22KA01	Compressed Air System	35
71111.12	Miscellaneous		Oil Analysis Results	Various
71111.12	Miscellaneous	E190.0074	Inservice Testing Program	33
71111.12	Miscellaneous	RFR 160853	Mobil 1 10w30 Synthetic Formula Change	12/06/2016
71111.12	Procedures	APA-ZZ-00320	Work Execution	68
71111.12	Procedures	APA-ZZ-00356	Pump and Valve Inservice Test Program	25
71111.12	Procedures	APA-ZZ-00395	Significant Operator Response Timing	31
71111.12	Procedures	EDP-ZZ-01128	Maintenance Rule Program	27
71111.12	Procedures	EDP-ZZ-01131	Plant Health and Performance Monitoring Program	28
71111.12	Procedures	EDP-ZZ-01131, Appendix 0	Dingle Point Vulnerabilities	7
71111.12	Procedures	MDP-ZZ-L0001	Lubrication Program	18
71111.12	Work Orders		15503300, 18506414	
71111.13	Procedures	APA-ZZ-00322, Appendix F	Online Work Integrated Risk Management	17
71111.15	Corrective Action Documents	Condition Reports	201605184	
71111.15	Miscellaneous	M-724---634	IM Power Operated Relief Valve	6
71111.15	Procedures	OSP-BB-V0001	RCS Valve Inservice Test	31
71111.18	Corrective Action Documents	Condition Reports	201904750	
71111.18	Miscellaneous	RFR 180001	Approve a More Robust Temperature Switch for the EDGs	0
71111.18	Work Orders		19002862	
71111.19	Corrective Action Documents	Condition Reports	201805241, 201900360, 201904287, 201905831, 201905990, 201906020	
71111.19	Procedures	APA-ZZ-00322, Appendix E	Post Maintenance Test Program	14

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71111.19	Procedures	OSP-NE-00001A	Standby Diesel Generator A Periodic Tests	65
71111.19	Procedures	OSP-NE-00003	Technical Specifications Actions - A.C. Sources	
71111.22	Corrective Action Documents	Condition Reports	201406773, 201408096, 201604473, 201704959, 201804199, 201805560, 201805563, 201904821	
71111.22	Procedures	FLEX-Boron Injection	FLEX Boron High Pressure RCS Injection Pump Background Information Document	1
71111.22	Procedures	ODP-ZZ-00002	Equipment Status Control	91
71111.22	Procedures	ODP-ZZ-00004	Locked Component Control	43
71111.22	Procedures	OSP-EN-P001B	Train B Containment Spray Pump Inservice Test	50
71111.22	Procedures	OSP-GK-0013B	B Train Supplemental Fan Tests	3
71111.22	Work Orders		18003285, 18507920, 18508476, 19508478, SIR 719677	
71114.01	Corrective Action Documents	Condition Reports	201702329, 201703137, 201703460, 201703570, 201703778, 201704088, 201704334, 201704382, 201706622, 201800600, 201800875, 201800888, 201801238, 201802128, 201802690, 201802722, 201803906, 201804072, 201804073, 201805129, 201805635, 201806927, 201806943, 201806954, 201904165, 201904169, 201904176, 201904738, 201904740, 201905459	
71114.01	Corrective Action Documents Resulting from Inspection	Condition Reports	201905434, 201905438, 201905453, 201905455, 201905459, 201905460, 201905463, 201905478, 201905482, 20195500, 201905501, 201905508, 201905515, 201905554, 201905849	
71114.01	Miscellaneous		Callaway Plant Radiological Emergency Response Plan, R51	9/26/2018
71114.01	Miscellaneous		SDP-PI-RERPO RERP	8
71114.01	Miscellaneous		After-Action Evaluation Report for the June 29, 2017, Team Turnover Exercise	8/23/2017
71114.01	Miscellaneous		After-Action Evaluation Report for the Annual ERO Exercises, July 20 through August 24, 2017	10/5/2017
71114.01	Miscellaneous		After-Action Evaluation Report for the Health Physics Drill conducted August 2, 2017	
71114.01	Miscellaneous		After-Action Evaluation Report for the Training Drills, January 18 through February 15, 2018	4/10/2018



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71114.01	Miscellaneous		After-Action Evaluation Report for the Team 4 Exercise conducted March 8, 2018	4/11/2018
71114.01	Miscellaneous		After-Action Evaluation Report for the Health Physics Drill conducted March 8, 2018	
71114.01	Miscellaneous		After-Action Evaluation Report for the Environmental Team Drill conducted May 24, 2018	
71114.01	Miscellaneous		After-Action Evaluation Report for the Third Quarter 2018 Muster Meetings	7/30/2018
71114.01	Miscellaneous		After-Action Evaluation Report for the Fourth Quarter 2018 Muster Meetings	11/2/2018
71114.01	Miscellaneous		After-Action Evaluation Report for the Annual ERO Exercises, November 15 through December 13, 2018	2/13/2019
71114.01	Miscellaneous		After-Action Evaluation Report for the First Quarter 2019 Muster Meetings	3/26/2019
71114.01	Miscellaneous		After-Action Evaluation Report for the Training Drills, January 24 through February 28, 2019	6/4/2019
71114.01	Miscellaneous		After-Action Evaluation Report for the Health Physics Drill conducted June 6, 2019	
71114.01	Miscellaneous		After-Action Evaluation Report for the Environmental Team Drill conducted July 9, 2019	
71114.01	Miscellaneous		After-Action Evaluation Report for the Team 5 Exercise conducted May 24, 2018	7/16/2018
71114.01	Miscellaneous		After-Action Evaluation Report for the June 6, 2019, Exercise	7/17/2019
71114.01	Miscellaneous	CA2684	Respiratory Protection/TEDE ALARA Evaluation Worksheet	0
71114.01	Miscellaneous	CA2783	Emergency Response Facility Functionality Evaluation	
71114.01	Miscellaneous	CA2831	Precautions in the Administration of Potassium Iodide (KI)	0
71114.01	Miscellaneous	Course: T61.08108, Session: 20180284	Licensed Operator Continuing Training Evaluation Summary Report	08/09/2018
71114.01	Miscellaneous	HPCI-08-05	Airborne Exposure Decision Matrix for KI Issuance, Dose Extensions, and SCBA Issuance	0
71114.01	Miscellaneous	Scenario # DS-31	Dynamic Simulator Exam Scenario	7/31/2018

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71114.01	Miscellaneous	Scenario # DS-45	Dynamic Simulator Exam Scenario	6/11/2018
71114.01	Miscellaneous	Scenario # S-2 Cycle 18-4	DEP Scenarios 1	7/16/2018
71114.01	Miscellaneous	Scenario # S-5 Cycle 18-4	DEP Scenarios 2	7/16/2018
71114.01	Miscellaneous	Training Requests	TR201900150, TR201900151, TR20190152, TR201900158	
71114.01	Procedures	APA-ZZ-01000	Callaway Energy Center Radiation Protection Program	46
71114.01	Procedures	APA-ZZ000500	Corrective Action Program	71
71114.01	Procedures	EIP-ZZ-00101	Classification of Emergencies, R55	7/11/2018
71114.01	Procedures	EIP-ZZ-00101, Addendum 2	Emergency Action Levels Basis Document, R16	4/1/2019
71114.01	Procedures	EIP-ZZ-00102	Emergency Implementing Actions, R65	6/4/2019
71114.01	Procedures	EIP-ZZ-00200	Augmentation of the Emergency Response Organization, R21	4/11/2016
71114.01	Procedures	EIP-ZZ-00201	Notifications, R51	2/14/2017
71114.01	Procedures	EIP-ZZ-00201, Addendum B	TSC (ENS) Communicator Package	6
71114.01	Procedures	EIP-ZZ-00201, Addendum A	Control Room Notification Flowchart, R31	6/27/2019
71114.01	Procedures	EIP-ZZ-00201, Addendum C	EOF Notification Package, R32	6/27/2019
71114.01	Procedures	EIP-ZZ-00211	Field Monitoring, R39	7/31/2019
71114.01	Procedures	EIP-ZZ-00212	Protective Action Recommendations, R30	3/29/2018
71114.01	Procedures	EIP-ZZ-00219	Emergency Dispatching of Operations Personnel	0
71114.01	Procedures	EIP-ZZ-00220	Emergency Team Formation, R25	11/10/2016
71114.01	Procedures	EIP-ZZ-00230	Accountability, R35	9/18/2017
71114.01	Procedures	EIP-ZZ-00240	Technical Support Center Operations, R43	4/20/2018
71114.01	Procedures	EIP-ZZ-00240, Addendum B	Technical Assessment Coordinator (TAC) Checklist	15
71114.01	Procedures	EIP-ZZ-00240, Addendum C	Operations Support Coordinator (OSC) Checklist	9
71114.01	Procedures	EIP-ZZ-00240, Addendum D	Administrative (ADMIN) Coordinator Checklist	13

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71114.01	Procedures	EIP-ZZ-00240, Addendum G	Chemistry Coordinator Checklist	12
71114.01	Procedures	EIP-ZZ-00240, Addendum H	Security Coordinator Checklist	7
71114.01	Procedures	EIP-ZZ-00240, Addendum A	Emergency Coordinator Checklist, R7	4/20/2018
71114.01	Procedures	EIP-ZZ-00240, Addendum E	Health Physics Coordinator Checklist	23
71114.01	Procedures	EIP-ZZ-01211	Accident Dose Assessment, R38	4/1/2019
71114.01	Procedures	EIP-ZZ-A0001	Emergency Response Organization, R20	7/11/2018
71114.01	Procedures	EIP-ZZ-C0010	Emergency Operations Facility Operations, R40	9/12/2016
71114.01	Procedures	HDP-Z-01100	ALARA Planning and Review	25
71114.01	Procedures	HDP-ZZ-01200	Radiation Work Permits	33
71114.01	Procedures	HDP-ZZ-01300	Internal Dosimetry Program	36
71114.01	Procedures	HDP-ZZ-01450	Authorization to Exceed Federal Occupational Dose	13
71114.01	Procedures	HDP-ZZ-08000	Respiratory Protection Program	24
71114.01	Procedures	HTP-ZZ-08002	Respiratory Protection Issue and Use	42
71114.01	Procedures	KDP-ZZ-00013	Emergency Response Facility and Equipment Evaluation	17
71114.01	Procedures	KDP-ZZ-02001	Drill and Exercise Program, R26	6/17/2019
71114.01	Self-Assessments	Benchmark 201820044-001	Observation of Diablo Canyon's Quality Verification Audit	4/4/2018
71114.01	Self-Assessments	Benchmark 201820044-010	EP Department Staff Improvement	10/15/2018
71114.01	Self-Assessments	Formal Self-Assessment 201900029-044	Exercise Readiness and Modified Program Inspection	3/26/2019
71114.01	Self-Assessments	SSA 201600059-051	Pre-NRC Program Inspection	3/13/2017
71114.01	Self-Assessments	SSA 201720030-009	Implementation of ACAD 15-010, Guidelines for the Training and Qualifications of Emergency Response Personnel	8/24/2018
71151	Corrective Action Documents	Condition Reports	201802310, 201803070, 201803485, 201803516, 201803944, 201804523, 201804760, 201805003, 201805129, 201806927, 201806954, 201901978, 201904357, 201904376, 201904701, 201904736	

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71151	Procedures	KDP-ZZ-02000	NRC Performance Indicator Data Collection, R19	6/26/2018
71151	Procedures	KSP-ZZ-00110	Siren Alerting System Testing	16
71151	Procedures		NRC Performance Indicator Transmittal Report	Various
71152	Corrective Action Documents	Condition Reports	201901943, 201902794	
71152	Miscellaneous	CR 201805611	Receipt of Response to TIA 201410, Emergency Diesel Generator Mission Time for Operability Evaluations at Callaway Plant	10/25/2018
71152	Miscellaneous	RFR 180048	Evaluate Non-Safety Accessories in Safety HVAC Systems	1
71152	Miscellaneous	TIA 2014-10	Response to Task Interface Agreement 201410 Related to the Regulatory Position on Emergency Diesel Generator Mission Time for Inoperability Evaluations at Callaway Plant Unit No. 1 (CAC No. MF5099, EPID L2015LRA0001)	10/19/2018
71152	Miscellaneous	ZZ-452	Post-Accident Filter Loading	0
71152	Procedures	APA-ZZ-00323	Configuration Management Process	18
71152	Procedures	ODP-ZZ-00002	Equipment Status Control	91