UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

May 5, 2014

Mr. Fadi Diya, Senior Vice
President and Chief Nuclear Officer
Union Electric Company
P.O. Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT – NRC INTEGRATED INSPECTION
REPORT 05000483/2014002

Dear Mr. Diya:

On March 21, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Callaway Plant. On March 26, 2014, the NRC inspectors discussed the results of this inspection with Mr. B. Cox, Senior Director, Nuclear Operations, and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented three findings of very low safety significance (Green) in this report. Two of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of these NCVs, 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Callaway Plant.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 Regional Administrator, Region IV; and the NRC resident inspector at the Callaway Plant.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, “Public Inspections, Exemptions, Requests for Withholding,” a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC’s Public

Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Docket Number: 50-483
License Number: NPF-30

Enclosure: Inspection Report 05000483/2014002
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000483
License:	NPF-30
Report:	05000483/2014002
Licensee:	Union Electric Company
Facility:	Callaway Plant
Location:	Junction Highway CC and Highway O Steedman, MO
Dates:	January 1 through March 21, 2014
Inspectors:	T. Hartman, Senior Resident Inspector Z. Hollcraft, Resident Inspector P. Elkmann, Senior Inspector, Emergency Preparedness
Approved By:	N. O'Keefe Chief, Project Branch B Division of Reactor Projects

SUMMARY

IR 05000483/2014002; 01/01/2014 – 03/21/2014; Callaway Plant, Integrated Resident and Regional Report; Operability Determinations and Functionality Assessments, Follow-up of Events and Notices of Enforcement Discretion

The inspection activities described in this report were performed between January 1 and March 21, 2014, by the resident inspectors at the Callaway Plant and one inspector from the NRC's Region IV office. Three findings of very low safety significance (Green) are documented in this report. Two of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects Within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Initiating Events

Green. The inspectors reviewed a self-revealing finding involving the failure to correct a design deficiency known to represent s single point plant trip vulnerability. Specifically, Procedure EDP-ZZ-01131, "Callaway Plant Health Program," required documenting and correcting Health Issues, which included single point vulnerabilities. Health Issue 2005028 was written to identify that dampers in the main generator bus duct cooling system were not designed for the flow rate they experienced. This document was subsequently closed without correcting the single point vulnerability it was written to address. Also, in 2011, after Callaway Action Request 201108672 identified that this concern still existed, the licensee failed to document the condition as a new Health Issue or correct the condition. As a result, the damper blades came loose and entered the bus duct, which resulted in a fault on the auxiliary transformer and a subsequent unit trip in July 2013. As a result of the trip, the site performed a modification to remove the single point vulnerability and documented the issue in their corrective action program as Callaway Action Request 201305943.

The inspectors determined that failure to correct a design deficiency known to represent a single point plant trip vulnerability was a performance deficiency. This performance deficiency was more than minor because it is associated with the design control attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to correct a long term design issue resulted in an electrical fault and subsequent reactor trip. The inspectors assessed the finding in accordance with NRC Inspection Manual 0609, Appendix A, Exhibit 1, "Initiating Event Screening Questions," and determined the finding required a detailed risk evaluation because the performance deficiency caused an initiating event and affected some mitigating equipment. Therefore, a senior reactor analyst performed a detailed risk evaluation. The analyst determined that the finding was of very low safety significance (Green). The bounding change to the core damage frequency was

approximately 4.2E-7/year. The dominant core damage sequences involved transients that led to anticipated transient without scram events. The recovery of the startup transformer, the recovery of the circulating water pumps, and the availability of the auxiliary feedwater system helped minimize the risk significance. This finding has a cross-cutting aspect in the consistent process component of the human performance cross-cutting area because the licensee failed to use a consistent, systematic approach to make decisions and risk insights were not incorporated as appropriate. Specifically, despite identifying a single point vulnerability that could have caused a plant trip in 2011, the licensee's processes were not properly utilized to address the issue and risk insights were not used properly to elevate the importance of the issue to ensure the licensee took appropriate action [H.13] (Section 4OA3.3).

Cornerstone: Mitigating Systems

Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide an adequate procedure for construction and disassembly of scaffolding. Specifically, the licensee failed to ensure that nearby systems, structures, and components were not impacted during periods while scaffolding was being constructed and disassembled in their vicinity. The licensee documented this concern in Callaway Action Request 201400646 and immediately suspended any scaffold work until the procedure could be revised to ensure operability of adjacent equipment during construction and disassembly.

Failure to ensure that nearby systems, structures, and components were not impacted during periods when scaffolding is being constructed or disassembled in their vicinity was a performance deficiency. This performance deficiency affected the Mitigating Systems Cornerstone and was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern because future scaffolds could impact the functionality of mitigating systems. The finding was determined to be of very low safety significance since the finding did not result in identifying any specific example of a loss of functionality of mitigating systems, structures, and components. This finding does not have a cross-cutting aspect because it did not represent current performance, since this procedure had been in effect since 2005 (Section 1R15).

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," involving the licensee's failure to prevent repetition of a significant condition adverse to quality. Specifically, the licensee failed to implement corrective actions to prevent repletion that were identified for a significant condition associated with the uncoupling of an essential service water system valves and their motor operator. The condition had been identified during similar failures in 1990 and 1993, but the planned corrective actions were never implemented. As a result, another service water valve failed in the same manner in 2012. This issue was entered into the licensee's corrective action program as Callaway Action Request 201401188. Corrective actions included updating the preventative maintenance instructions to include torque checks on the coupling bolts and verify all valves with similar couplings are checked by December 2014.

The inspectors determined the failure to prevent repetition of a significant condition adverse to quality was a performance deficiency. This performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors assessed the finding in accordance with NRC Inspection Manual 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," and determined the finding required a detailed risk evaluation because it involved the failure of a safety related valve (a single train) for longer than the technical specification allowed outage time. Therefore, a senior reactor analyst performed a bounding Phase 3 significance determination. The analyst determined that the finding was of very low safety significance (Green). The bounding change to the core damage frequency was approximately 4.5E-8/year. The dominant core damage sequences associated with the failed valve included losses of offsite power, failure of the redundant valve in the same train, random failures of the opposite train pump, failure to recover offsite power in 2 hours, and a consequential reactor coolant pump seal loss of coolant accident. Equipment that helped mitigated the risk included the redundant essential service water isolation valve in the same train as well as the auxiliary feedwater system and the steam generators. This finding did not have a cross-cutting aspect because the issue occurred in 1993 and is not indicative of current plant performance (Section 4OA3.2).

PLANT STATUS

Callaway operated at 100 percent power for the duration of the inspection period with the exception of planned power reductions for routine surveillances and post-maintenance testing.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

Since high wind conditions were forecast in the vicinity of the facility for February 20, 2014, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features, the licensee's procedures to respond to high winds, and the licensee's implementation of these procedures. The inspectors toured the plant grounds to look for any loose debris that could become missiles during high wind conditions. The inspectors also reviewed a sample of corrective action program items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures.

These activities constituted one sample of readiness for impending adverse weather conditions, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walk-downs of the following risk-significant systems:

- January 18, 2014, control room air conditioning system train B
- January 22, 2014, safety injection system train B
- March 4, 2014, motor-driven auxiliary feedwater pump train A

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the trains were correctly aligned for the existing plant configuration.

These activities constituted three partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on five plant areas important to safety:

- January 15, 2014, train A pipe space and access area, fire area A-1I
- February 14, 2014, train A and B control room air conditioning areas, fire areas A-21 and A-22
- February 25, 2014, train B safety injection and centrifugal charging pump rooms, fire area A-4A
- March 18, 2014, main steam isolation valve rooms 1 and 2, fire area A-23B
- March 20, 2014, fuel building 2026' and 2047' elevations, fire areas F-1B and F-1C

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted five quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On February 21, 2014, the inspectors completed an inspection of underground bunkers susceptible to flooding. The inspectors selected safety related electrical manhole MH01A that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment. The inspectors observed the material condition of the cables and splices contained in the manhole and looked for evidence of cable degradation due to water intrusion. The inspectors verified that the cables and vault met design requirements.

These activities constitute completion of one bunker/manhole sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On January 21, 2014, the inspectors observed an evaluated simulator scenario performed by an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the simulator scenario.

These activities constitute completion of one quarterly licensed operator requalification program sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to the complexity of the activities and coordination of multiple work groups in and out of the control room. The inspectors observed the operators' performance of the following activities:

- January 18, 2014, slave relay train B surveillance testing, including the pre-job brief

- March 6, 2014, crew turnover and power reduction to support auxiliary feedwater testing

In addition, the inspectors assessed the operators' adherence to plant procedures, including Procedure ODP-ZZ-00001, "Operations Department – Code of Conduct," and other operations department policies.

These activities constitute completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

On March 18, 2014, the inspectors reviewed the licensee's periodic 10 CFR 50.65(a)(3) assessment of the Maintenance Rule Program.

The inspectors verified that a periodic evaluation was completed within the time constraints of 10 CFR 50.65(a)(3). The inspectors also verified that the licensee reviewed its (a)(1) goals, (a)(2) performance criteria, monitoring, preventive maintenance activities, effectiveness of corrective actions, and that industry operating experience was taken into account where practicable.

These activities constituted completion of one maintenance effectiveness sample, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed two risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- February 3, 2014, "yellow" plant risk during turbine-driven auxiliary feedwater pump planned maintenance

- February 7, 2014, “yellow” plant risk during component cooling water train B planned maintenance

The inspectors verified that these risk assessments were performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee’s risk assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

The inspectors also observed portions of two emergent work activities that had the potential to affect the functional capability of mitigating systems:

- March 5, 2014, motor-driven auxiliary feedwater pump B to steam generator D control valve repairs, Job 08505547

- March 11, 2014, class 1E electrical switchgear chiller train B bearing replacement, Job 13504550

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected structures, systems, and components.

These activities constitute completion of four maintenance risk assessments and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed four operability determinations and functionality assessments that the licensee performed for degraded or nonconforming structures, systems, or components:

- January 30, 2014, probabilistic risk assessment for scaffolding, Callaway Action Request 201400646

- February 1, 2014, broken door actuator for the auxiliary feedwater pump area, Callaway Action Request 201400747

- February 14, 2014, rising level in the component cooling water train B surge tank, Callaway Action Request 201401077

- March 10, 2014, Class 1E electrical switchgear chiller train B excessive noise, Callaway Action Request 201401610

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded structure, system, or component to be operable or functional, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability or functionality. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability or functionality of the degraded structure, system, or component.

These activities constitute completion of four operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide an adequate procedure for construction and disassembly of scaffolding. Specifically, the licensee failed to ensure that nearby systems, structures, and components were not impacted during periods while scaffolding was being constructed and disassembled in their vicinity.

Description. During a plant walkdown, the inspectors noted new scaffolding that had been built in close proximity to both emergency diesel generators. Both scaffolds had been inspected and certified as adequately constructed seismically, but were unusually close to the emergency diesel generators in some places, so the inspectors began reviewing this issue. The inspectors were concerned that both trains of emergency onsite power could fail during a seismic event.

While questioning operators, the inspectors learned that Procedure MDP-ZZ-S0001, "Scaffolding Installation and Evaluation," Revision 32, steps 4.3.2.b.1 and b.2 allowed scaffolding to be under construction for 32 hours before a seismic inspection was required and the procedure failed to ensure that seismic restraint elements were built into the scaffolds as they were constructed to ensure timely restraint.

Operators stated that the basis for allowing a scaffolding to be constructed for 32 hours without adequate seismic restraint was Probabilistic Risk Assessment Evaluation Request 05-261. The inspectors reviewed this evaluation and noted that it concluded that no risk management actions were required for scaffolding during this time period, since the probability of a seismic event was very low. However, this document did not evaluate the potential impact to operability of safety-related equipment in the same vicinity during the period of time before seismic restraint and inspection. Further, the use of risk evaluations to assess operability is not permitted by Inspection Manual Chapter 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety." Although this guidance was appropriately incorporated into the licensee's operability assessment procedure, the inspectors determined that it was not being followed in the case of scaffolding.

The inspectors did not identify any specific examples where scaffolds had affected safety-related equipment during a seismic event. The licensee documented this concern in Callaway Action Request 201400646 and immediately suspended any scaffold work until the procedure could be revised to ensure operability of adjacent equipment during construction and disassembly

Analysis. Failure to ensure that the nearby systems, structures, and components were not impacted during periods when scaffolding is being constructed or disassembled in their vicinity was a performance deficiency. This performance deficiency affected the Mitigating Systems Cornerstone, and was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern because future scaffolds could impact the functionality of mitigating systems. The finding was assessed using Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," and was determined to be of very low safety significance since a licensee evaluation concluded that while the performance deficiency was related to the qualification of mitigating systems, structures, or components, there were no specific examples where operability was impacted. This finding does not have a cross-cutting aspect because it did not represent current performance, since this procedure had been in effect since 2005.

Enforcement. Title 10 of the *Code of Federal Regulations* Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. Contrary to this, between 2005 and 2014, the licensee performed activities affecting quality using a procedure that was inappropriate to the circumstances. Specifically, Callaway Procedure MDP-ZZ-S0001, "Scaffolding Installation and Evaluation," Revision 32, failed to provide appropriate instructions to ensure that scaffolding was constructed to avoid impacting the operability of quality systems, structures, and components during the construction and disassembly of scaffolding, and was inspected in a timely manner. This violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. The licensee documented this concern in Callaway Action Request 201400646 and immediately suspended any scaffold work until the procedure could be revised to ensure operability of adjacent equipment during construction and disassembly:
NCV 05000483/2014002-01, "Inadequate Scaffold Procedure to Ensure Nearby Equipment is
Not Impacted."

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On February 24, 2014, the inspectors reviewed a permanent modification to EFHS0064, Ultimate Heat Sink Cooling Tower Fans B & D Hand Isolation Switch, Modification Package MP 07-0151.

The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not

adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the operability of the structures, systems, and components as modified.

These activities constitute completion of one sample of permanent modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed five post-maintenance testing activities that affected risk-significant structures, systems, or components:

- January 23, 2014, safety injection pump train A, Job 12507452
- January 30, 2014, control room air conditioning unit train A, Job 12512139
- February 26, 2014, steam generator A atmospheric steam dump valve, Job 12511855
- March 6, 2014, motor-driven auxiliary feedwater pump B to steam generator D control valve, Job 08505547
- March 18, 2014, steam generator C atmospheric steam dump valve, Job 12510734

The inspectors reviewed licensing and design-basis documents for the structures, systems, or components and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected structures, systems, or components.

These activities constitute completion of five post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed five risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the structures, systems, and components were capable of performing their safety functions:

In-service tests:

- February 25, 2014, turbine stop and combined intermediate valve in-service test

Other surveillance tests:

- January 18, 2014, train B containment spray and safety injection slave relays
- January 29, 2014, security diesel generator monthly surveillance run
- January 30, 2014, emergency diesel generator train A fast start
- February 26, 2014, reactor coolant system activity

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected structures, systems, or components following testing.

These activities constitute completion of five surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Legal and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors preformed an in-office review of:

- Procedure EIP-ZZ-00101, “Classification of Emergencies,” Revision 49

- Procedure EIP-ZZ-00101, Addendum 2, “Emergency Action Level Technical Bases Document,” Revision 7

These documents were implemented January 6, 2014. These revisions updated titles of emergency response organization command and control positions.

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency

Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to Nuclear Energy Institute Report 99-01, "Emergency Action Level Methodology," Revision 4, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constitute completion of two samples as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on March 13, 2014, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the Technical Support Center and the simulator, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constitute completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index: Emergency AC Power Systems (MS06) and Cooling Water Support Systems (MS10)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of first quarter 2013 through fourth quarter 2013 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for emergency ac power systems and for cooling water support systems for Callaway Plant, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors reviewed the licensee's reactor coolant system chemistry sample analyses for the period of first quarter 2013 through fourth quarter 2013 to verify the accuracy and completeness of the reported data. The inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample on February 26, 2014. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the reactor coolant system specific activity performance indicator for Callaway Plant, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected two issues for an in-depth follow-up:

- On August 17, 2013, Callaway Action Request 201306424 was written to address the licensee's inadvertent entry into Limiting Condition for Operation 3.0.3 from resetting a main feedwater pump

- On November 21, 2013, Callaway Action Request 201308870 was written to address the turbine-driven auxiliary feedwater pump found with electrical overspeed trip leads disconnected

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

These activities constitute completion of two annual follow-up samples as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 2013-003-00, Violation of Technical Specification 3.7.10 due to B Train Control Room Emergency Ventilation System Inoperability

On March 23, 2013, the unit was on line in Mode 1 at 96 percent rated thermal power coasting down for the refueling outage. During restoration from testing of the containment isolation dampers, status indication for the control room emergency ventilation system filtration fan for train B was lost in the control room and the associated dampers closed. Subsequent troubleshooting identified the cause as localized overheating on the starter's phase C line-side stationary contact termination from a loose screw that tripped the fan on thermal overload. This screw was assumed to have loosened over time due to thermal cycling and mechanical agitation.

Licensee Event Report 2013-003-00 was submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by technical specifications based on the period of past inoperability of train B along with periods of train A being declared inoperable for routine maintenance. The inspectors reviewed the licensee's submittal and determined that the report adequately documented the event, including the potential safety consequences and necessary corrective actions. No violations were identified during the inspectors' review. This licensee event report is closed.

.2 (Closed) Licensee Event Report 2013-005-00, Inoperability of Essential Service Water Cross Connect Valve

a. Inspection Scope

On April 4, 2013, during leak testing of a service water to essential service water cross-connect valve, valve seat leakage in excess of 10 gallons per minute was identified. While evaluating the condition, the licensee identified that the valve stem had become uncoupled from the motor operator. The licensee declared the valve inoperable and entered the required actions B.1 and B.2 of Technical Specification 3.7.9. A review of the testing data for this valve showed that the condition might have existed since April 2, 2012, when it was last tested. The licensee determined the cause was most likely the coupling block fastening bolts had loosened over time due to thermal cycling and mechanical agitation. This allowed the coupling block to move along the stem and subsequently allow the stem and motor to become uncoupled.

Licensee Event Report 2013-005-00 was submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by technical specifications, and 10 CFR 50.73(a)(2)(v)(A), -(B), and -(C), as a condition that could have prevented fulfillment of the safety function of structures or systems that are needed to shut down the reactor, remove residual heat, and mitigate the consequences of an accident. The inspectors reviewed the licensee's submittal and determined that the report adequately documented the event, including the potential safety consequences and necessary corrective actions. A violation of regulatory requirements is discussed below. This licensee event report is closed.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," involving the licensee's failure to prevent repetition of a condition adverse to quality. Specifically, the licensee failed to implement corrective actions that were identified for a significant condition associated with the essential service water system.

Description. On April 4, 2013, during leak testing of EFHV0024, essential service water train B to service water cross-connect valve, valve seat leakage in excess of 10 gallons per minute was identified. Investigation revealed that EFHV0024 had become uncoupled from its associated motor operator, rendering the valve inoperable. The licensee entered the required actions for Technical Specification 3.7.9.

The licensee's cause evaluation identified two previous instances where this issue occurred, once in 1990 and again in 1993. Callaway Action Request 199001400 identified where EFHV0037, the essential service water train B return to the ultimate heat sink valve, had become uncoupled and Callaway Action Request 199301554 identified where EFHV0026, an essential service water train B to service water cross-connect valve, had become uncoupled. In addition to recoupling the valves to their actuators, the licensee had identified corrective actions to correct the adverse conditions that allowed the bolts to become loose by checking the bolt torque on similar valves identified from the extent of condition and adding a step to the preventative maintenance instructions to verify torque on these coupling bolts. The inspectors reviewed the cause evaluation and planned corrective actions. The inspectors also reviewed the previous failures to look for similarities. The corrective actions from 1990 and 1993 were the same corrective actions identified in the current evaluation. The inspectors challenged the licensee about taking the same corrective actions again and whether the actions would correct the adverse condition. At this time, it was discovered the licensee had never implemented the corrective actions to add periodic checks to preventive maintenance instructions planned in 1990 and 1993.

This issue was entered into the licensee's corrective action program as Callaway Action Request 201401188.

The inspectors reviewed the 1990 valve coupling failure and concluded that this condition should have been treated as a significant condition adverse to quality at the time of the failure. Specifically, the licensee identified that the coupling bolts had not been sufficiently tight to prevent becoming loose during operation. The inspectors noted that the 1990 failure of valve EFHV-0037 prevented operation of a valve needed to allow essential service water flow to the ultimate heat sink. Further, the affected valve population included EFHV-38 (the associated train B valve) and EFHV-0065 and -0066, the essential service water ultimate heat sink bypass valves. Failure of the latter valves could prevent essential service water flow to the cooling towers for their respective trains, significantly reducing the amount of cooling available. Because the condition affected valves that could limit or prevent the cooling function of one or more trains, the

inspectors noted that the licensee's prompt corrective actions restored the functionality of the valves, but failed to correct the cause of the condition, allowing repetitive failures.

Analysis. The failure to implement corrective actions to prevent repetition for a condition adverse to quality identified in 1990 and 1993 was a performance deficiency. Specifically, the licensee failed to incorporate the corrective actions from Callaway Action Requests 199001400 and 199301554, which should have revised the preventative maintenance instructions to include torque checks of the coupling fastener bolts. Failure to incorporate the corrective actions resulted in the uncoupling of an essential service water isolation valve from its associated motor. This performance deficiency was more than minor because it was associated with and adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

Using NRC Inspection Manual 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding required a detailed risk evaluation because it involved the failure of a safety related valve (a single train) for longer than the technical specification allowed outage time. Therefore, a senior reactor analyst performed a bounding Phase 3 significance determination.

The analyst assumed a full year exposure period. The analyst used the Callaway Standardized Plant Analysis Risk (SPAR) model, Revision 8.21, to calculate the change in the core damage frequency (delta-CDF) associated with this performance deficiency. The analyst used a truncation level of E-11. The analyst set basic event ESW-MOV-OO-V024 to a failure probability of 1.0. This indicated that the valve had failed but that the licensee had ruled out the chance of a common cause failure mode. Common cause failure means other valves could fail for this same cause within the first 24 hours of an event.

The analyst adjusted the SPAR results to capture just the cutsets that contained the basic event of interest. The conditional core damage probability for the sliced group was 4.5E-8. The analyst noted that this would bound the delta-CDF. Since the result was much less than 1E-6, no further adjustments were made. The delta-CDF was therefore less than 4.5E-8/year.

The dominant core damage sequences associated with the failed valve included losses of offsite power, failure of the redundant valve in the same train, random failures of the opposite train pump, the failure to recover offsite power in two hours, and a consequential reactor coolant pump seal loss of coolant accident. Equipment that helped mitigated the risk included the redundant essential service water isolation valve in the same train as well as the auxiliary feedwater system and the steam generators.

Since the delta-CDF was less than E-7, no external events or the large early release frequency evaluations were required. This finding was of very low safety significance (Green). This finding does not have a cross-cutting aspect assigned

because the performance deficiency occurred in 1990 and 1993 and, therefore, is not indicative of current plant performance.

Enforcement. Title 10 of the *Code of Federal Regulations* Part 50, Appendix B, Criterion XVI, "Corrective Actions," states in part that for significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective actions are taken to preclude repetition. Contrary to the above, from August 9, 1990, through April 8, 2013, the licensee failed to implement corrective actions to preclude repetition of a significant condition adverse to quality. Specifically, from August 9, 1990, through April 8, 2013, the licensee did not implement planned corrective actions for two instances of valve stem separation from the actuators of safety-related valves. Corrective actions included updating the preventative maintenance instructions to include torque checks on the coupling bolts and verify all valves with similar couplings are checked by December 2014. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as Callaway Action Request 201401188, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy:
NCV 05000483/2014002-02, "Failure to Implement Corrective Actions to Prevent Recurrence."

.3 (Closed) Licensee Event Report 2013-008-00, Arcing in Isophase Bus Results in a Generator Trip, Turbine Trip, Reactor Trip and a Small Fire

a. Inspection Scope

On July 26, 2013, at 11:33 p.m., electrical faults caused extensive damage to the unit auxiliary transformer and the main generator neutral connection box. A protective relay initiated a trip of the main generator output breakers, the unit auxiliary transformer feeder breakers to the non-safety service buses, the main generator field circuit breaker, and the main turbine. A reactor trip from 100 percent power resulted from the turbine trip. A small fire inside the turbine building resulted from the main generator neutral connection box fault, an Unusual Event was initially declared for a fire (HU 2.1) but was later corrected to toxic, corrosive, asphyxiant or flammable gases deemed detrimental to normal operations of the plant (HU 3.1). The fire was quickly extinguished and the Unusual Event was terminated at 1:01 a.m. on July 27, 2013. The site responded to the unit trip and entered an outage to conduct repairs and a post-trip review. The plant was restarted on August 16, 2013, following modifications and repairs.

The licensee determined the root cause was a design control issue introduced during initial construction. The isophase bus duct cooling airflow was significantly more than the design flow rate of the cooler backdraft dampers; 34,000 cubic feet per minute actual flow versus a design rating of 18,000 cubic feet per minute. This resulted in excessive stress on the damper blades and subsequent failure. One of the damper blades was blown down the duct until it caused an electrical arc. This design issue had been identified in 2005 based on operating experience obtained from the industry; however, corrective actions implemented at the time were inadequate to prevent failures.

As a corrective action for the failure, the licensee performed a modification to install dampers with an adequate design air flow and a screen that would catch debris prior to entering the auxiliary transformer should a subsequent failure occur. The inspectors reviewed the licensee's submittal along with corrective action documents and determined that the licensee adequately documented the event, including the potential safety consequences and necessary corrective actions. A finding related to the failure to correct a single point failure that resulted in a plant trip is documented in this section. This licensee event report is closed.

b. Findings

Introduction. The inspectors reviewed a Green self-revealing finding involving the failure to correct a single point failure vulnerability.

Description. In September 2004, Callaway Action Request 200406913 was initiated to evaluate industry operating experience related to isophase bus ground faults. Request for Resolution 200503342 and modification MP 05-3010 were drafted to install inspection doors in the isophase bus duct to improve the quality of inspections for the future. In mid-2005, Request for Resolution 200503834 and Health Issue 2005028 were initiated to document and address the fact that the installed backdraft dampers on the isophase coolers were not rated for system airflow, and as a result, a single point vulnerability existed where a damper could fail and "initiate a plant trip due to damper material being blown into the isophase system." The required minimum design airflow for the isophase bus duct was 25,000 cubic feet per minute. The design airflow for the dampers was 18,000 cubic feet per minute, and actual flow rate was thought to be closer to 40,000 cubic feet per minute based on calculations.

During Refueling Outage 14 in October 2005, the dampers were replaced with "like-kind" dampers, with the same part number and design airflow rate. Based on the damper replacement and creation of a regular inspection plan, both the request for resolution and the Health Issue were closed until Refueling Outage 15, when accurate air flow measurements could be obtained. As a result, the single point vulnerability of a failed damper blade causing a plant trip was not addressed at the time of the closure of this Health Issue. In 2007, the inspection doors were installed, and flow measurements were completed that confirmed that the flow rate was indeed higher than the design flow rate of the dampers; however, nothing was entered into the corrective action program nor was a new Health Issue generated to correct the condition.

During a 2011 inspection, it was noted that a damper blade had failed and was found in the B phase of the isophase bus duct. Callaway Action Request 201108672 was generated but was given a low significance despite stating that "[f]ailure of the backdraft dampers most probably will initiate a plant trip due to damper material being blown into the isophase system." The system engineer also initiated Request for Resolution 201110208 to recommend a damper with a higher design flow rate and a debris screen to prevent failed components from entering the isophase bus; however, it was not resolved as of July 2013. Also, a new Health Issue for a single point vulnerability was not generated.

On July 26, 2013, a subsequent failure caused a damper blade to enter the isophase bus duct. Significant faulting resulted in a main turbine and reactor trip. A small fire broke out due to arcing in the main generator neutral connection box. The fire was quickly extinguished and an Unusual Event was declared. The plant entered an outage and performed modifications in line with the recommendations of Request for Resolution 201110208; both installing new dampers with higher design flow and a screen to catch debris before it could enter the isophase bus.

Analysis. The inspectors determined that failure to correct a known single point plant trip vulnerability was a performance deficiency. Procedure EDP-ZZ-01131, "Callaway Plant Health Program," Revision 5 (in effect in 2005), section 4.3.13 stated that "Health Issues are significant, long-standing system, program or component-specific or cross-cutting issues that pose a threat to equipment reliability." Step 4.3.13.a states, in part, that "Health Issues are documented . . . to address . . . single point vulnerabilities." Similar requirements exist in the revision in effect in 2011. Section 4.3 goes on to describe acceptable methods to correct Health Issues. Contrary to this, Health Issue 2005028 was closed without correcting the single point vulnerability it was written to address and the licensee failed to re-open the issue in 2007 after the airflow values were confirmed. Also, in 2011, after Callaway Action Request 201108672 identified that this concern still existed, the licensee failed to document the condition as a Health Issue. This performance deficiency is more than minor because it is associated with the design control attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, failure to correct a long term design issue resulted in a reactor trip. The inspectors evaluated the finding using NRC Inspection Manual 0609, Appendix A, Exhibit 1, "Initiating Event Screening Questions." The finding required a detailed risk evaluation because the performance deficiency caused an initiating event and some mitigating equipment was also lost for short periods. Therefore, a senior reactor analyst performed a detailed risk evaluation.

The Callaway SPAR model, Revision 8.21, was used to calculate the delta-CDF associated with this performance deficiency. A truncation limit of E-11 was used.

Considering that the performance deficiency caused an initiating event (reactor trip with loss of circulating water), guidance was used from the NRC's "Risk Assessment of Operational Events Handbook," Volume 1, Revision 2.0. Specifically, the analyst used Section 8.0, "Initiating Event Analysis." Case 3 was determined to be the most appropriate method for evaluating the performance deficiency. Case 3 is for performance deficiencies that cause both an initiating event and the subsequent unavailability of a system, structure, or component that is inclusive of the initiating event. For these events, the conditional core damage probability (CCDP) was calculated for the event (including affected components) and then the units were converted to reflect the delta-CDF.

CCDP Calculation: The affected components included:

- Startup transformer (which was recovered within a few seconds)
- Reactor coolant pumps (The pump flow function was not risk important and was not modeled. Consequently, the analyst did not consider the reactor coolant pumps further.)
- Condenser (which was recovered an hour after the event)

A plant trip with a loss of condenser heat sink is most similar to a loss of condenser heat sink initiating event. To evaluate the above components, the analyst used change sets to reflect the modeling differences. The analyst set the loss of condenser heat sink initiating event to 1.0. In addition, the analyst increased the startup transformer failure probability by 1.1E-2 (the nominal human error failure probability). This was to account for the recovery of the startup transformer. Since the original failure probability was 2.3E-5, the resultant failure probability with recovery was 1.1E-2.

The CCDP was 1.1E-6, but this was for a non-recoverable loss of condenser heat sink. To provide recovery credit, the analyst multiplied the result by the nominal operator non-recovery probability of 1.1E-2. The resultant CCDP was 1.21 E-8. The analyst multiplied this by 1/yr to change the units to delta-CDF. The delta-CDF was 1.21 E-8/yr.

Sensitivity Case, Reactor Trip: A recovered loss of condenser heat sink event is very similar to a reactor trip. Since the reactor trip was not recovered, the analyst calculated the CCDP of the reactor trip, holding the other assumptions (component failure probabilities) the same. The CCDP was 4.2E-7. Since the reactor trip alone was more significant, the analyst determined that the CCDP for the reactor trip should be used. The analyst multiplied the reactor trip CCDP by 1/yr to change the units to delta-CDF. The delta-CDF was 4.2 E-7/yr.

The dominant core damage sequences involved transients that led to anticipated transient without scram events. The recovery of the startup transformer, the recovery of the circulating water pumps, and the availability of the auxiliary feedwater system helped to minimize the risk significance.

Incremental CCDP of Failed Components: There were no unrecovered failed components that had a corresponding exposure period. The analyst determined that this standard part of the calculation was not needed.

Large Early Release Frequency: To address the contribution to conditional large early release frequency, the analyst used NRC Inspection Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004. Since the performance deficiency did not contribute directly to a steam generator tube rupture or an intersystem loss of coolant accident, the condition was not risk significant to the large early release frequency.

This finding has a cross-cutting aspect in the consistent process component of the human performance cross-cutting area because the licensee failed to use a consistent, systematic approach to make decisions and risk insights were not incorporated as appropriate. Specifically, despite identifying a single point vulnerability that could cause a plant trip, the licensee's processes were not properly employed to address the issue, and risk insights did not properly elevate the importance of the issue to ensure the licensee took appropriate action (H.13).

Enforcement. This finding does not involve enforcement action because no violation of a regulatory requirement was identified. The finding is of very low safety significance and the issue was entered into the licensee's corrective action program as Callaway Action Request 201305943: FIN 05000483/2014002-03, "Failure to Correct a Design Deficiency in Main Generator Bus Duct Cooling System."

These activities constitute completion of three event follow-up samples, as defined in Inspection Procedure 71153.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On March 20, 2014, the emergency preparedness inspector presented the results of the in-office inspection of changes to the licensee's emergency plan and emergency action levels to Mr. P. McKenna, Manager, Emergency Preparedness, and other members of the licensee's staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On March 26, 2014, the inspectors presented the resident inspector inspection results to Mr. B. Cox, Senior Director, Nuclear Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On May 5, 2014, the inspectors presented changes to the characterization of two findings to Mr. L. Graessle, Senior Director of Operations Support. The licensee acknowledged the issues presented.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Becker, Supervising Engineer, Nuclear Engineering Services
F. Bianco, Assistant Manager, Operations
B. Cox, Senior Director, Nuclear Operations
F. Diya, Senior Vice President and Chief Nuclear Officer
T. Elwood, Supervising Engineer, Regulatory Affairs and Licensing
M. Haag, Principal Engineer, Nuclear Engineering-Electrical
D. Hall, Director, Nuclear Operations
S. Maglio, Manager, Regulatory Affairs
P. McKenna, Manager, Emergency Preparedness
M. McLachlan, Director, Engineering Systems
D. Neterer, Vice President, Engineering
S. Petzel, Licensing Engineer, Regulatory Affairs
C. Reasoner, Vice President, Nuclear Operations
K. Tipton, Supervising Engineer, NSSS Systems

NRC Personnel

G. Replogle, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000483/2014002-01	NCV	Inadequate Scaffold Procedure to Ensure Nearby Equipment is Not Impacted
05000483/2014002-02	NCV	Failure to Implement Corrective Actions to Preclude Repetition (Section 4OA3.2)
05000483/2014002-03	FIN	Failure to Correct a Design Deficiency in Main Generator Bus Duct Cooling System

Closed

05000483/2013-003-00	LER	Violation of Technical Specification 3.7.10 due to B Train Control Room Emergency Ventilation System Inoperability (Section 4OA3.1)
05000483/2013-005-00	LER	Inoperability of Essential Service Water Cross Connect Valve (Section 4OA3.2)
05000483/2013-008-00	LER	Arcing in Isophase Bus Results in a Generator Trip, Turbine Trip, Reactor Trip and a Small Fire (Section 4OA3.3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

Number	Title	Revision
APA-ZZ-00365, Addendum 1	Callaway Lifting Operations	13
MDP-ZZ-0STOR	Staging and Storage of Materials, Equipment & Tools Within the Switchyard, Under the Electrical Distribution Lines, Protected Area, and Power Block	14
OTO-ZZ-00012	Severe Weather	27

Callaway Action Requests

201401239

Section 1R04: Equipment Alignment

Procedures

Number	Title	Revision
OSP-AL-P001A	Motor Driven Auxiliary Feedwater Pump A Inservice Test – Group A `	60
OSP-AL-P001A Checklist 1	Auxiliary Feedwater Train A Restoration Checklist	40
OSP-EM-P001B	Safety Injection Train B Inservice Test – Group B	46
OSP-EM-P001B, Checklist 1	Safety Injection Train B" System Restoration	31

Drawings

Number	Title	Revision
M-22AL01	Piping and Instrumentation Diagram Auxiliary Feedwater	16
M-22EF01	Piping and Instrumentation Diagram Essential Service Water System	24
M-22GK01	Piping and Instrumentation Diagram Control Building Heating Ventilation Air Conditioning	20

Callaway Action Requests

200507374	200600634	200800583	201400358	201400420

Jobs

12511817

Miscellaneous

Number	Title	Revision
GK-19, Addendum 3	2016' Auxiliary Building and Switchboard Room GOTHIC Temperature Analysis	0

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
	Fire Pre-plan Manual	37
APA-ZZ-00741	Control of Combustible Materials	25
FPP-ZZ-00001, Attachment 17	Pre-plan/Fire Area #A-1I, Auxiliary Building, 1988' Elevation	24
FPP-ZZ-00001, Attachment 51	Pre-plan/Fire Area #A-21, Auxiliary Building, 2047'-6" Elevation	24
FPP-ZZ-00001, Attachment 52	Pre-plan/Fire Area #A-22, Auxiliary Building, 2047'-6" Elevation	24
FPP-ZZ-00001, Attachment 13	Pre-plan/Fire Area #A-4A, Auxiliary Building, 1974' Elevation	24
FPP-ZZ-00001 Attachment 53	Pre-plan/Fire Area #A-23B, Auxiliary Building, 2047'-6' Elevation	24
FPP-ZZ-00002 Attachment 4	Pre-plan/Fire Area #F-1B, Fuel Building, 2026' Elevation	7
FPP-ZZ-00002 Attachment 7	Pre-plan/Fire Area #F-1C, Fuel Building, 2047' Elevation	7

Jobs

12510734	13004612

Miscellaneous

Number	Title	Date
23726	Hot Work Permit Fire Protection Impairment Permit #23726	March 20, 2014
	Transient Combustible Permit for Jobs 13004612, 13004611 and 13004614	February 19, 2014

Section 1R06: Flood Protection Measures

Drawings

Number	Title	Revision
C-U203	Essential Service Water System Units 1&2 – Electrical Manholes – Plans, Sections & Details	7
E-UR0221	Raceway Plot Plan – Essential Service Water System – Plans & Sections	9

Callaway Action Requests

201306141 201401585

Jobs

12511900

Section 1R11: Licensed Operator Requalification Program

Procedures

Number	Title	Revision
APA-ZZ-0100B	Job Briefs	13
ODP-ZZ-00001, Addendum 2	Briefs	11
ODP-ZZ-00001, Addendum 10	Reactivity Management	16
ODP-ZZ-00002, Appendix 3	Risk Management Action for Fire Risk Systems and Components	1
OSP-SA-0017B	Train B Safety Injection System-Containment Spray Actuation System Slave Relay Test	32
OTG-ZZ-00004, Addendum 3	Planned Power Changes from Full Power	8

Procedures

Number	Title	Revision
OTN-NE-0001B	Standby Diesel Generation System – Train B	48

Jobs

13512570

Miscellaneous

Number	Title	Date
T61.0810.8	Dynamic Simulator Exam Scenario, 2014-1 As Found #1	December 11, 2013
CA2423	Job Brief for Job 13512570.500	January 18, 2014

Section 1R12: Maintenance Effectiveness

Procedures

Number	Title	Revision
EDP-ZZ-01128	Maintenance Rule Program	21
EDP-ZZ-01128, Appendix 2	Summary of System, Structure and Component Performance Criteria	25

Callaway Action Requests

200909313	201002567	201005701	201201449	201202068
201302158	201305425			

Miscellaneous

Number	Title	Date
201305425, Attachment 1	Maintenance Rule Periodic Assessment for Cycle 19 (11/25/11 through 05/29/13)	November 26, 2013

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

Procedures

Number	Title	Revision
APA-ZZ-00152	Emergent Issue Response	12
EDP-ZZ-01129	Callaway Energy Center Risk Assessment	39
ODP-ZZ-00002	Equipment Status Control	74
ODP-ZZ-00002, Appendix 1	Protected Equipment Program	20
ODP-ZZ-00002, Appendix 2	Risk Management Actions for Planned Risk Significant Activities	8
OTN-GK-00001	Control Building Heating Ventilation and Air Conditioning System	42

Drawings

Number	Title	Revision
M-22AL01	Piping & Instrument Diagram – Auxiliary Feedwater System	43

Callaway Action Requests

201401571 201401610 201401699

Jobs

08505547 13006014 13504550 13513364

Miscellaneous

Number	Title	Date
	Standing Order: Actions for Inoperability of Class 1E A/C Unit	January 31, 2014
24014	FSAR 16.7.13.1 and OTN-GK-00001 Actions for SGK05B Out of Service (Continuous Fire Watch)	March 11, 2014

Section 1R15: Operability Evaluations

Procedures

Number	Title	Revision
APA-ZZ-00500, Appendix 1	Operability and Functionality Determinations	21
MDP-ZZ-S0001	Scaffolding Installation and Evaluation	32
MDP-ZZ-S0001	Scaffolding Installation and Evaluation	33

Callaway Action Requests

200403508	201400646	201400747	201400855	201401077
201401381	201401544	201401610		

Jobs

13504550

Miscellaneous

Number	Title	Date
	Essential Service Water Total System Leakage	February 14, 2014
	Night Order: Seismic II/I concerns during scaffolding construction/removal	February 14, 2014
05-261	Probabilistic Risk Assessment Evaluation Request Form: Maintenance Rule (a)(4) Assessment of Scaffold Construction and Teardown	September 6, 2005
	Night Order: Maintaining Ultimate Heat Sink Operability – Callaway Action Requests 201001813, 201007669 and 201307879	October 30, 2013

Section 1R18: Plant Modifications

Drawings

Number	Title	Revision
E-U3EF02A	Schematic Diagram – Ultimate Heat Sink Cooling Tower Fans	21

Drawings

Number	Title	Revision
E-U3EF02A	Schematic Diagram – Ultimate Heat Sink Cooling Tower Fans	22
E-U3EF02BA	Schematic Diagram – Ultimate Heat Sink Cooling Tower Fans B & D Speed Selection	0
E-U3EF02BA	Schematic Diagram – Ultimate Heat Sink Cooling Tower Fans B & D Speed Selection	1
E-U3EF02CA	Schematic Diagram – Ultimate Heat Sink Cooling Tower Fans B & D Manual Control	0
E-U3EF02CA	Schematic Diagram – Ultimate Heat Sink Cooling Tower Fans B & D Manual Control	1
E-U3EF10	Schematic Diagram – Miscellaneous Circuits	7
E-U3EF10	Schematic Diagram – Miscellaneous Circuits	8

Callaway Action Requests

201400296 201400495 201401165 201401186

Jobs

14000219

Miscellaneous

Number	Title
MP 07-0151	EFHS0064, Ultimate Heat Sink Cooling Tower Fans B & D Hand Isolation Switch

Section 1R19: Post-Maintenance Testing

Procedures

Number	Title	Revision
OSP-AB-V002A	Steam Generator Atmospheric Steam Dump Valves Inservice Test	41
OSP-AL-PV04B	Train B Motor Driven Auxiliary Feedwater Comprehensive Pump and Check Valve Test	17
OSP-AL-V001B	Train B Auxiliary Feedwater Valve Inservice Test	52

Procedures

Number	Title	Revision
OSP-EM-P001A	Safety Injection Train A Inservice Test – Group B	47
OSP-KA-V0003	Nitrogen Accumulator Inservice Leak Rate Test	26
OTN-GK-00001	Control Building Heating Ventilation Air Conditioning System	41

Drawings

Number	Title	Revision
M-22BN01	Piping & Instrumentation Diagram – Borated Refueling Water Storage System	25
M-22EM01	Piping & Instrumentation Diagram – High Pressure Coolant Injection System	37
M-22KA05	Piping & Instrumentation Diagram – Compressed Air System	7
M-22KH01	Piping & Instrumentation Diagram – Service Gas System	16

Callaway Action Requests

201400084	201400469	201400855

Jobs

08505547	12507452	12510734	12511855	12512139
13003320	14000326	14000523		

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision
CSP-ZZ-07600	Reactor Coolant System Activity Determinations	38
CTP-SJ-01102	Auxiliary Building Sample Station (SJ-143) Operation	37
CTP-SJ-01102 Addendum C	Chemical and Volume Control System Influent Sampling at SJ143	2
CTP-ZZ-02540	Depressurized Liquid Specific Isotopic Activity Determination	26
HTP-ZZ-04564	APEX Suite Operations	11

Procedures

Number	Title	Revision
OSP-AC-00001	Turbine Stop Valve Trip Actuating Device Test	13
OSP-AC-00003	Turbine Control Valve Stroke Test	19
OSP-AC-00006	Combined Intermediate Valve Stroke Test	7
OSP-NE-0001A	Standby Diesel Generator A Periodic Tests	54
OSP-SA-0017B	Train B Safety Injection System-Containment Spray Actuation System Slave Relay Test	32
OTS-UB-00001	Security Diesel Generator Operability Test	17
OTS-UB-00002	Security Diesel Generator Load Test	9
TOPRP	Turbine Overspeed Protection Reliability Program	12

Callaway Action Requests

200900395 201309122

Jobs

12505728 13006840 13512570 14500360 14500361

14500362

Miscellaneous

Number	Title	Date
MFP-00826	Post Fire Safe Shutdown Impact due to Centrifugal Charging Pump Running	August 26, 2009

Section 1EP6: Drill Evaluation

Procedures

Number	Title	Revision
EIP-ZZ-00101, Addendum 1	Emergency Action Level Classification Matrix	3

Callaway Action Requests

201401776 201401800

Jobs

14001124

Miscellaneous

Number	Title	Date
	Emergency Preparedness Team Drill	March 13, 2014
	Callaway Energy Center Simulator Differences	January 8, 2014

Section 4OA1: Performance Indicator Verification

Miscellaneous

Number	Title	Revision Date
	Callaway Energy Center Mitigating System Performance Index Basis Document	11
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unavailability Index	March 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unavailability Index	June 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unavailability Index	September 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unavailability Index	December 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unreliability Index	March 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unreliability Index	June 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unreliability Index	September 2013
	Mitigating System Performance Index Derivation Report: Emergency AC Power System Unreliability Index	December 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unavailability Index	March 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unavailability Index	June 2013

Miscellaneous

Number	Title	Revision Date
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unavailability Index	September 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unavailability Index	December 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unreliability Index	March 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unreliability Index	June 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unreliability Index	September 2013
	Mitigating System Performance Index Derivation Report: Cooling Water Systems Unreliability Index	December 2013

Section 4OA2: Identification and Resolution of Problems

Procedures

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E-23FC27	Schematic Diagram, Steam Generator Feedwater Pump Turbines A & B Isolation Input to Engineering Safety Feature Actuation System	2
J-104-00176	Logic Block Diagram, Engineering Safety Feature Actuation System	13
M-22FC04	Piping and Instrument Diagram, Auxiliary Turbines – Steam Generator Feedwater Pump Turbine B	22

Callaway Action Requests

201306424

Jobs

13004800

Miscellaneous

Number	Title	Date
	Control Room Narrative Logs	August 17, 2013
T.61.0110.6/T61.016C.6	Systems, Main Feedwater System – AE	July 24, 2013

Section 4OA3: Event Follow-Up

Procedures

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APA-ZZ-00500 Appendix 17	Screening Process Guidelines	19
EDP-ZZ-01128	Maintenance Rule Program	21
EDP-ZZ-01128, Appendix 1	Systems Structures and Components in the Scope of the Maintenance Rule at Callaway	9
EDP-ZZ-01128, Appendix 2	Summary of Systems Structures and Components Performance Criteria	25
EDP-ZZ-01128, Appendix 4	Maintenance Rule System Functions	12
EDP-ZZ-01131	Callaway Plant Health Program	5
EDP-ZZ-01131	Callaway Plant Health Program	23
OSP-GT-00005	Containment Isolation Dampers Operational Test	17
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Callaway Action Requests

199001400	199301554	200503834	201302004	201302424
201302485	201302538	201305943	201401188	

Jobs

10514529