



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

May 2, 2013

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

SUBJECT: CALLAWAY PLANT - NRC INTEGRATED INSPECTION REPORT  
05000483/2013002

Dear Mr. Heflin,

On March 27, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Callaway Plant. The enclosed inspection report documents the inspection results which were discussed on April 3, 2013, with Mr. C. Reasoner, Vice President Engineering, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

No findings were identified during this inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document 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, Chief  
Project Branch B  
Division of Reactor Projects

Docket No.: 50-483  
License No.: NPF-30

Enclosure: Inspection Report 05000483/2013002  
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

Electronic Distribution by RIV:

- Regional Administrator (Art.Howell@nrc.gov)
- Acting Deputy Regional Administrator (Robert.Lewis@nrc.gov)
- DRP Director (Kriss.Kennedy@nrc.gov)
- Acting DRP Deputy Director (Michael.Scott@nrc.gov)
- DRS Director (Tom.Blount@nrc.gov)
- Acting DRS Deputy Director (Jeff.Clark@nrc.gov)
- Senior Resident Inspector (Thomas.Hartman@nrc.gov)
- Acting Resident Inspector (Jason.Draper@nrc.gov)
- Acting Resident Inspector (Jason.Dykert@nrc.gov)
- Branch Chief, DRP/B (Neil.OKeefe@nrc.gov)
- Senior Project Engineer, DRP/B (Michael.Bloodgood@nrc.gov)
- Project Engineer, DRP/B (David.You@nrc.gov)
- CW Administrative Assistant (Dawn.Yancey@nrc.gov)
- Public Affairs Officer (Victor.Dricks@nrc.gov)
- Public Affairs Officer (Lara.Uselding@nrc.gov)
- Project Manager (Fred.Lyon@nrc.gov)
- Branch Chief, DRS/TSB (Ray.Kellar@nrc.gov)
- RITS Coordinator (Marisa.Herrera@nrc.gov)
- ACES (R4Enforcement.Resource@nrc.gov)
- Regional Counsel (Karla.Fuller@nrc.gov)
- Technical Support Assistant (Loretta.Williams@nrc.gov)
- Congressional Affairs Officer (Jenny.Weil@nrc.gov)
- ROPreports
- RIV/ETA: OEDO (Doug.Huyck@nrc.gov)

R:\\_REACTORS\\_CW\2013\CAL 2013002-RP-TCH.docx

SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	NFO
Publicly Avail.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	NFO
SRI:DRP/B	RI:DRP/B	C:DRS/TSB	C:DRS/EB1	C:DRS/EB2	C:DRS/OB
THartman	JDraper	RKellar	TFarnholtz	GMiller	VGaddy
T-OKEEFE	T-OKEEFE	/RA/GReplogle for	/RA/GGeorge for	/RA/SGraves for	/RA/VGG
5/2/13	5/2/13	5/2/13	5/2/13	5/2/13	5/2/13
C:DRS/PSB1	AC:DRS/PSB2	BC:DRP/B			
MHaire	JDrake	NOKeefe			
/RA/	/RA/	/RA/			
5/2/13	5/2/13	5/2/13			

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000483  
License: NPF-30  
Report: 05000483/2013002  
Licensee: Union Electric Company  
Facility: Callaway Plant  
Location: Junction Highway CC and Highway O  
Dates: January 1 through March 27, 2013  
Inspectors: T. Hartman, Senior Resident Inspector  
J. Draper, Acting Resident Inspector  
J. Laughlin, Emergency Preparedness Inspector, NSIR  
Approved By: Neil O'Keefe, Chief  
Project Branch B  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000483/2013002, 01/01 - 03/27/2013; Callaway Plant, Integrated Resident and Regional Report

The report covered a 3-month period of inspection by resident inspectors and an in-office review by region-based inspectors. No findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross-Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

**A. NRC-Identified Findings and Self-Revealing Findings**

None

**B. Licensee-Identified Violations**

None

## REPORT DETAILS

### Summary of Plant Status

Callaway began the inspection period at 100 percent power. With the exception of planned power reductions for routine surveillance testing, the plant remained at full power until March 15, 2013. On that date, the plant began an end of cycle coastdown with power slowly lowering as available fuel reactivity decreased near the end of the designed core life. The plant ended the inspection period at 93.5 percent power.

### 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 thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for January 29, 2013, the inspectors reviewed the plant personnel's overall preparations/protection for the expected weather conditions. The inspectors evaluated the adequacy of the plant staff's preparations against the site's procedures. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors also reviewed a sample of corrective action program (CAP) 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. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one readiness for impending adverse weather condition sample as defined in Inspection Procedure 71111.01-05.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment (71111.04)

##### Partial Walkdown

##### a. Inspection Scope

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

- January 4, 2013, vital ac switchgear air conditioning unit train A with train B out of service
- February 7, 2013, control room air conditioning system train A with train B out of service
- February 14, 2013, essential service water train A during replacement of essential service water train B pump motor
- February 25, 2013, non-safety auxiliary feedwater pump

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Final Safety Analysis Report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

**1R05 Fire Protection (71111.05)**

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- January 31, 2013, residual heat removal pump room train A, containment spray pump room train A, safety injection pump room train A, and centrifugal charging pump room train A; fire areas A-2A and A-2B
- February 22, 2013, control building, room 3101, fire area C-1
- February 22, 2013, lower cable spreading room; fire area C-21
- February 22, 2013, upper cable spreading room; fire area C-22
- March 8, 2013, load center and motor-generator sets room; fire area A-27

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On February 17, 2013, the inspectors observed the fire brigade activation for a fire drill in the laundry decontamination general area. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient

firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of preplanned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives.

These activities constitute completion of one annual fire-protection inspection sample as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Program

a. Inspection Scope

On February 5, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations and the quality of the evaluation
- The modeling and performance of the control room simulator
- The quality of post-scenario critiques
- Follow-up actions taken by the licensee for identified discrepancies and for operators who failed the evaluation

Specific documents reviewed during this inspection are listed in the attachment.

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 Quarterly Observation of Licensed Operator Performance

a. Inspection Scope

On the dates listed below, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. The inspectors observed the operators' performance of the following activities:

- March 18, 2013, shifting trains of the component cooling water system
- March 25, 2013, routine control room activities including shift turnover during plant coastdown

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.

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two quarterly licensed-operator performance samples as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant system:

- January 14, 2013, ultimate heat sink train A cooling tower sump heater

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in the unplanned inoperability of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance monitoring

- Charging unavailability for performance monitoring
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or -(a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly maintenance effectiveness sample as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- February 14, 2013, emergent emergency service water train B pump motor replacement, Job 13000796
- March 7, 2013, failure of the in-core flux map console, Job 13001069
- March 18, 2013, emergent control room air conditioning system train B chiller freon leak, Job 13001278

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly

assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

**1R15 Operability Evaluations and Functionality Assessments (71111.15)**

a. Inspection Scope

The inspectors reviewed the following assessments:

- January 14, 2013, ultimate heat sink cooling tower train A sump frozen over, Callaway Action Request 201300301
- February 5, 2013, undocumented modification on control room chillers and class 1E electrical bus chillers, Callaway Action Request 201300905
- March 4, 2013, containment isolation valves de-energized for maintenance, Callaway Action Request 201301650
- March 26, 2013, turbine-driven auxiliary feedwater pump operability during end of cycle coastdown, Callaway Action Request 201301816

The inspectors selected these operability and functionality assessments based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure technical specification operability was properly justified and to verify the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Final Safety Analysis Report to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

No findings were identified.

**1R18 Plant Modifications (71111.18)**

Temporary Modifications

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the following temporary modification:

- Temporary Modification 12-0005, train A class 1E electrical equipment air conditioning unit (SGK05A) sensing line modification

The inspectors reviewed the temporary modification and the associated safety evaluation screening against the system design bases documentation, including the Final Safety Analysis Report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

**1R19 Post-Maintenance Testing (71111.19)**

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- January 8, 2013, control room air conditioning train B functional test following compressor replacement, Job 11005024
- February 16, 2013, essential service water train B pump post-maintenance testing following pump motor replacement, Job 13000796
- March 6, 2013, containment spray train B pump and valve post-maintenance testing following system maintenance outage, Job 13500597
- March 13, 2013, residual heat removal train B mini-flow valve post-maintenance testing following valve packing adjustment, Job 12001954
- March 21, 2013, control room air conditioning train B functional test following freon leak repair, Job 13001278
- March 26, 2013, control room filter fan train B testing following contactor replacement, Job 13001438

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following:

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the Final Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six post-maintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

## **1R20 Refueling and Other Outage Activities (71111.20)**

### a. Inspection Scope

The inspectors reviewed the Callaway outage schedule, staffing plans, and contingency plans for the refueling outage, scheduled to commence April 8, 2013, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. In addition, the inspectors reviewed the new fuel receipt process for the upcoming outage.

Specific documents reviewed during this inspection are listed in the attachment.

These inspection efforts constituted elements of a refueling outage sample as defined in Inspection Procedure 71111.20-05 which will be counted at the conclusion of Refueling Outage 19.

### b. Findings

No findings were identified.

## **1R22 Surveillance Testing (71111.22)**

### a. Inspection Scope

The inspectors reviewed the Final Safety Analysis Report, procedure requirements, and technical specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- January 9, 2013, infrequent at-power measurement of moderator temperature coefficient routine surveillance, Job 11508863

- January 23, 2013, centrifugal charging pump train A inservice test, Job 12511736
- January 31, 2013, safety injection system – containment spray actuation system train A slave relay routine testing, Job 12512150
- March 8, 2013, reactor coolant system dose equivalent iodine-131 routine surveillance testing
- March 14, emergency diesel generator train B slow start routine testing, Job 13502063

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four routine and one inservice surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

**1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)**

a. Inspection Scope

The Nuclear Security and Incident Response headquarters staff performed an in-office review of the latest revisions of various emergency plan implementing procedures and the emergency plan located under ADAMS accession numbers ML130670147 and ML122000092.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the plan, and that the revised plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC 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. The specific documents reviewed during this inspection are listed in the attachment.

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 evaluated the conduct of a routine licensee emergency drill on March 5, 2013, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the team 1 and 2 turnover drill to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

These activities constitute completion of one 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 Data Submission Issue

##### a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the fourth quarter 2012 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

##### b. Findings

No findings were identified.



.2 Mitigating Systems Performance Index - Emergency ac Power System (MS06)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for the period from the first quarter 2012 through the fourth quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of January 2012 through December 2012 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index - emergency ac power system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Cooling Water Systems (MS10)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator for the period from the first quarter 2012 through the fourth quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of January 2012 through December 2012 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index - cooling water system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity performance indicator for the period from the first quarter 2012 through the fourth quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's reactor coolant system chemistry samples, technical specification requirements, issue reports, event reports, and NRC integrated inspection reports for the period of January 2012 through December 2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system specific activity sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

**40A2 Problem Identification and Resolution (71152)**

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications,

common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

**40A5 Other Activities**

(Closed) Temporary Instruction 2515/187 - Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

The inspectors verified that the following walkdown packages contained the elements as specified in NEI 12-07, "Walkdown Guidance," document:

- Job 12003510-530, Post Fukushima Flooding Walkdown Room 3101
- Job 12003510-535, Post Fukushima Flooding Non-Radiologically Controlled Areas
- Job 12003510-540, Post Fukushima Flooding Walkdown Radwaste Tunnel 1974'

On October 2, 2012, the inspectors accompanied the licensee on their walkdown of Job 12003510-540, Post Fukushima Flooding Walkdown Radwaste Tunnel 1974' location and verified that the licensee confirmed the following flood protection features:

- Building internal surfaces were examined for cracks, water staining, and spalling
- Critical structure's, system's, and component's dimensions were measured
- Available physical margin, where applicable, was determined
- Labeled wall penetrations were compared with architectural drawings by the licensee walkdown teams
- Passive ground water stops for pipes, conduit, cables, and building seismic gaps, were inspected for leakage

On February 22, 2013, the inspectors independently performed their walkdown and verified that the following flood protection features were in place for Job 12003510-530, Post Fukushima Flooding Walkdown Room 3101 location:

- Passive ground water stops for pipes, conduit, cables, and building seismic gaps, were inspected for leakage
- Building internal surfaces were examined for cracks, water staining, and spalling

The inspectors verified that noncompliances with the current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's corrective action program. No issues were identified.

Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings were identified.

**40A6 Meetings, Including Exit**

Exit Meeting Summary

On April 3, 2013, the inspectors presented the inspection results to Mr. C. Reasoner, Vice President Engineering, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee Personnel

M. Covey, Assistant Operations Manager  
B. Cox, Senior Director, Nuclear Operations  
F. Diya, Vice President, Nuclear Operations  
T. Elwood, Supervising Engineer, Regulatory Affairs and Licensing  
L. Graessle, Senior Director, Operations Support  
L. Kanuckel, Director, Engineering Design  
J. Little, Supervising Engineer, Reactor/Safety Analysis  
S. Maglio, Regulatory Affairs Manager  
S. Petzel, Engineer, Regulatory Affairs  
C. Reasoner, Vice President, Engineering

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened and Closed

None

Discussed

None

**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OTO-ZZ-00012	Severe Weather	23

CALLAWAY ACTION REQUESTS

201300725      201300931

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
ULNRC-1973	Docket Number 50-483, Callaway Plant, Station Blackout, NRC TAC No. 68524	April 12, 1989

## Section 1R04: Equipment Alignment

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OTN-EF-00001, CL0007	Normal Control Room Handswitch Lineup – Essential Service Water System Train A	29
OTN-EF-00001, CL0009	Normal Handswitch Lineup – Essential Service Water System Train A	27
OTN-GK-00001	Control Building HVAC System	40
OTN-GK-00001, CL0002	Control Building HVAC System Normal Valve Lineup by Component	15
OTN-GK-00001, CL0003	Control Building HVAC System Switch Lineup	13
OTN-GK-00001, CL0006	Control Building HVAC System CREVS Flow Balance Damper and Register Lineup – Train A	13
OTN-GK-00001, CL0001	Control Building HVAC System Electrical Equipment Lineup	13
OTS-AP-00001	Non-Safety Auxiliary Feedwater Pump Testing and Operation	2
OTS-AP-00001, CL0001	Non-Safety Auxiliary Feedwater Pump Electrical Lineup	1
OTS-AP-00001, CL0002	Non-Safety Auxiliary Feedwater Pump Valve Lineup	2

### DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-22GK03	Piping and Instrument Diagram – Control Building HVAC.	23
M-U2EF01(Q)	Piping & Instrumentation Diagram – Essential Service Water System	65
M-22EF01(Q)	Piping and Instrumentation Diagram – Essential Service Water System	78
M-22EF02(Q)	Piping and Instrumentation Diagram – Essential Service Water System	74
M-22AP01	Piping and Instrumentation Diagram – Condensate Storage and Transfer System	28

**Section 1R05: Fire Protection**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
A210.0098	Fire Preplan Manual	34
FPP-ZZ-00001, Attachment 2	Pre-Plan/Fire Area #A2-A, Auxiliary Building, 1967' Elevation	23
FPP-ZZ-00001, Attachment 10	Pre-Plan/Fire Area #A-2B, Auxiliary Building, 1974' Elevation	23
FPP-ZZ-00004, Attachment 1	Pre-Plan/Fire Area #C-1, Control Building and Communications Corridor, 1974' Elevation	17
FPP-ZZ-00004, Attachment 26	Pre-Plan/Fire Area #C-21, Control Building and Communications Corridor, 2032' Elevation	17
FPP-ZZ-00004, Attachment 43	Pre-Plan/Fire Area #C-22, Control Building and Communications Corridor, 2073' Elevation	17
FPP-ZZ-00001, Attachment 46	Pre-Plan/Fire Area #A-27, Auxiliary Building, 2026' Elevation	23
APA-ZZ-00741	Control of Combustible Materials	24

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
E-0R1122(Q)	Embedded Conduit Auxiliary Building Area-2 El. 1974'-0"	6

CALLAWAY ACTION REQUESTS

201301855

**Section 1R11: Licensed Operator Requalification Program**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OTN-EG-00001	Component Cooling Water System	54

CALLAWAY ACTION REQUESTS

201300946

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Cycle 13-1 As-Found Scenario # Sim 1	January 14, 2013
	Callaway Energy Center Simulator Differences	January 17, 2013

**Section 1R12: Maintenance Effectiveness**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EDP-ZZ-01128	Maintenance Rule Program	20
EDP-ZZ-01128, Appendix 2	Summary of Systems Structures and Components Performance Criteria	23
EDP-ZZ-01128, Appendix 4	Maintenance Rule System Functions	8

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-015-U0095	Heating System Installation Ultimate Heat Sink Tower	13

CALLAWAY ACTION REQUESTS

201300301

JOBS

11510249            13000201            13000202

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Callaway Control Room Logs	January 14, 2013

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EDP-ZZ-01129	Callaway Energy Center Risk Assessment	34
ETP-ZZ-00054	Target Flux Difference Update and Measurement	9



CALLAWAY ACTION REQUESTS

201301102          201301551          201301828

JOBS

13000796          13001069          13001278

**Section 1R15: Operability Evaluations**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
APA-ZZ-00500	Corrective Action Program	57
APA-ZZ-00500 Appendix 1	Operability and Functionality Determinations	19
ODP-ZZ-00001, Addendum 15	Operability and Functionality Determinations	8
APA-ZZ-00322 Appendix C	Job Planning	35

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-015-U0095	Heating System Installation – UHS Tower	13

CALLAWAY ACTION REQUESTS

201300301          201300644          201300905          201301650          201301816  
200909872          199300274

JOBS

13000201          13000202          11510249          13000567

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Callaway Narrative Logs	January 15, 2013
	Operating Quality Assurance Manual	22, 29a
RFR 02907	Safety Classification for Freon System of GK Coolers	B, D

RFR 18974 Oil Drain Fitting Adaptor for SGK04&5 Compressors A

**Section 1R18: Plant Modifications**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
APA-ZZ-00600	Design Change Control	47

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-22GK03	Piping and Instrumentation Diagram – Control Bldg H.V.A.C.	23

CALLAWAY ACTION REQUESTS

201208775      201208791      201300112

JOBS

12006364      12511902

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
TM 12-0005	SGK05A Sensing Line Modification	0

**Section 1R19: Post-Maintenance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EDP-ZZ-01111	Vibration Predictive Maintenance Program	16
MTE-GK-QC001	Control Room and Class 1E Air Conditioning Unit Charging	6
MTE-ZZ-QN006, Addendum D	EMAX Testing of 4160V and Above Motors	0
OSP-EF-P001B	Essential Service Water Train B Inservice Test	65
OSP-EN-P001B	Train B Containment Spray Pump Inservice Test	40
OSP-EJ-V001B	Train B RHR Valve Inservice Test	24
OTN-GK-00001	Control Building HVAC System	40

CALLAWAY ACTION REQUESTS

201301102	201300826	201301144	201301149	201301150
201301151	201301520	201301712	13001278	201302004

JOBS

13000567	13000796	12001954	13500597	13500598
13001438				

**Section 1R20: Refueling and Other Outage Activities**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ETP-ZZ-00003	Inspection of New Fuel	17
OTS-KE-00003	Unloading and Storage of New Fuel Assemblies and Inserts	30

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Callaway Refueling Outage 19 – Overview	January 23, 2013
	Callaway Outage Schedule – Critical Path	March 1, 2013

**Section 1R22: Surveillance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
APA-ZZ-00356	Pump and Valve Inservice Test Program	18
ESP-ZZ-00010	At-power Moderator Temperature Coefficient Measurement – IPTE	22
ODP-ZZ-00001	Operations Department – Code of Conduct	80
OSP-BG-P005A	Centrifugal Charging Pump A Inservice Test – Group B	43
OSP-NE-0001B	Standby Diesel Generator B Periodic Tests	54
OSP-SA-0017A	Train A SIS-CSAS Slave Relay Test	30
OTN-GK-00001	Control Building HVAC System	40
CSP-ZZ-07600	RCS Activity Determinations	37

CTP-ZZ-02540	Depressurized Liquid Specific Isotopic Activity Determination	26
CTP-SJ-01102	Auxiliary Building Sample Station (SJ-143) Operation	37
CTP-SJ-01102 Addendum C	CVCS Influent Sampling at SJ143	2
APA-ZZ-00340	Surveillance Program Administration	34

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-22BG03(Q)	Piping and Instrumentation Diagram, Chemical and Volume Control System	55
M-22KJ05(Q)	Piping and Instrumentation Diagram, Standby Diesel Generator 'B' Intake Exhaust, F.O. & Start. Air Sys	24

CALLAWAY ACTION REQUESTS

200900395	2013000287	201300706	201300757	201300983
-----------	------------	-----------	-----------	-----------

JOBS

11508863	12511736	13502063
----------	----------	----------

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Standing Order: Actions Upon Failure of Class 1E A/C Unit	1
E190.0074	Inservice Testing Program	31

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Radiological Emergency Response Plan	40
	Evacuation Time Estimate Study Update	

**Section 1EP6: Drill Evaluation**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
APA-ZZ-00004	Emergency Preparedness Department Responsibilities	20
KDP-ZZ-02001	Drill and Exercise Program	11

CALLAWAY ACTION REQUESTS

201301558      201301559      201301595      201301597      201301607  
201301664

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Team 1 & 2 Turnover Drill	March 5, 2013

**Section 40A1: Performance Indicator Verification**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
CSP-ZZ-07600	Reactor Coolant System Activity Determinations	37

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-22EG01(Q)	Piping and Instrumentation Diagram, Component Cooling Water System	10
M-22EG02(Q)	Piping & Instrumentation Diagram, Component Cooling Water System	21

CALLAWAY ACTION REQUESTS

201202157

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	6
	Callaway Energy Center Mitigating System Performance Index Basis Document	10

**Section 40A2: Identification and Resolution of Problems**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
APA-ZZ-00500	Corrective Action Program	57

CALLAWAY ACTION REQUESTS

201300301          201300757          201301014          201301971

**Section 40A5: Other Activities**

CALLAWAY ACTION REQUESTS

201206978          201206921

JOBS

12003510