UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

January 20, 2010

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

Subject: CALLAWAY - NRC INTEGRATED INSPECTION REPORT 05000483/2009005

Dear Mr. Heflin:

On December 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Callaway Plant. The enclosed integrated inspection report documents the inspection findings, which were discussed on December 30, 2009, with Mr. Fadi Diya, Vice President, Nuclear Operations, and other members of your staff.

The inspections 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.

This report documents two NRC-identified findings and one self-revealing finding of very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, 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, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Callaway Plant facility. In addition, if you disagree with the characterization of any finding 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. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document 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/

Geoffrey B. Miller, Chief
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Division of Reactor Projects

Docket: 50-483
License: NPF-30

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NRC Inspection Report 05000483/2009005
w/Attachment: Supplemental Information

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RIV:SRI/DRP/B	AC:DRS/OB	C:DRS/PSB1	C:DRS/PSB2
DDumbacher	SGarchow	MShannon	GWerner
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1/13/2010	1/6/2010	1/11/2010	1/11/2010
C:DRS/EB1	C:DRS/EB2	C:DRP/B	
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000483
License:	NPF-30
Report:	05000483/2009005
Licensee:	Union Electric Company
Facility:	Callaway Plant
Location:	Junction Highway C and Highway O Fulton, MO
Dates:	September 24 through December 31, 2009
Inspectors:	D. Dumbacher, Senior Resident Inspector J. Groom, Resident Inspector P. Elkmann, Senior Emergency Preparedness Inspector G. Guerra, CHP, Emergency Preparedness Inspector J. Melfi, Reactor Inspector M. Peck, Senior Resident Inspector
Approved By:	Geoffrey B. Miller, Chief, Project Branch B Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000483/2009005; 09/24–12/31/2009; Callaway Plant, Integrated Resident and Regional Report; Flood Protection Measures, Operability Evaluations, and Surveillance Testing.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by region-based inspectors. Three Green noncited violations of significance 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." 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

Cornerstone: Initiating Events

- Green. The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.4.1.a, "Procedures," after maintenance on power range nuclear instrument N41 resulted in an unanticipated plant transient. On October 6, 2009, the licensee performed Procedure ISL-SE-00N41 to calibrate power range nuclear instrument N41. During performance of the test, control rods unexpectedly inserted ten and a half steps at a rate of 72 steps per minute. The negative reactivity that was inserted due to the inward rod motion caused reactor power to drop approximately one percent power and pressurizer pressure to drop from 2235 psig to approximately 2223 psig. Subsequent review by the licensee determined that the cause of the undesired rod motion was the rod bank selector switch being left in "auto" rather than "other than auto" as required by the procedure. The licensee initiated Callaway Action Request 200908596 to address the causes of the unanticipated plant transient.

  This finding was determined to be greater than minor because it impacted the Initiating Events Cornerstone attribute of human performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," this finding was determined to be of very low safety significance since it did not affect the technical specification limit for reactor coolant system leakage or mitigation systems safety function, did not contribute to both the likelihood of a reactor trip and mitigation equipment or functions not being available, and did not increase the likelihood of a fire or internal/external flooding. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because the reactor operator who failed to place the rod bank selector switch into the procedurally required position failed to use human error prevention techniques, such as self- and peer-checking [H.4(a)] (Section 1R22).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after AmerenUE failed to provide adequate design control measures for verifying the adequacy of flooding analysis for the auxiliary feedwater pipe chase room 1206/1207. The revised calculation, performed on December 4, 2001, determined that the 10-inch piping from the condensate storage tank going to the main condenser was the limiting source of potential flooding. However several missing or incorrect assumptions challenged the basis for operability of safety related auxiliary feedwater pump related transmitters located in the room 22 inches above the floor level. On December 16, 2009, the licensee reperformed the flooding analysis calculation, M-FL-04, Revision 5, including the main condenser as an additional source of flooding. Although 984 gpm of margin was lost due to inclusion of the condenser as a source, the revised analysis supported an operability determination for the transmitters as operable.

  This finding was determined to be greater than minor because it impacted the Mitigating Systems Cornerstone attribute of design control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," this issue screened as very low safety significance because it was not a design or qualification deficiency that resulted in a loss of operability or functionality, did not create a loss of system safety function of a single train for greater than the technical specification allowed outage time, and did not increase the likelihood of a seismic, flooding, or severe weather initiating event. This finding was determined to not have a crosscutting aspect as the calculation of record was not reflective of current licensee performance (Section 1R6).

- Green. The NRC identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for two examples of failure to follow Procedure APA-ZZ-00500, Appendix 1, "Operability and Functionality Determinations." The first example occurred on January 14, 2009, following an immediate operability determination made in response to Callaway Action Request 200900231. That Callaway action request documented significant emergency diesel generator heat exchanger tube wall thinning during eddy current testing. The operability determination performed in response to the degraded condition identified in Callaway Action Request 200900231 assumed a linear rate of degradation based on the rate observed from 2006 to 2008 and extrapolated forward to predict when heat exchanger tube plugging limits would be exceeded. Subsequent eddy current testing by the licensee found that the assumed linear degradation rate was nonconservative. The inspectors determined that the licensee failed to provide a reasonable expectation of operability consistent with the requirements of licensee

Procedure APA-ZZ-00500, Appendix 1. Specifically, the licensee assumed a nonconservative linear rate of degradation for demonstrating emergency diesel heat exchanger operability despite empirical data that suggested the rate increased as a function of time.

The second example occurred on December 10, 2009, following initiation of Callaway Action Request 200910153 which documented that the steam generator C atmospheric steam dump valve (ABPV0003) would not repeatedly stroke to the same position. The Callaway action request documented that some amount of foreign material within the valve positioner was the cause of the repeatability issue with the valve. The inspectors reviewed Callaway Action Request 200910153 and noted that an immediate operability determination was not made on the identified degraded condition of foreign material within the air supply to the steam generator atmospheric steam dump valves. Since all four steam generator atmospheric steam dump valves share a common instrument air supply, the inspectors determined that the licensee failed to identify what structures, systems, and components were affected by the degraded condition in Callaway Action Request 200910153. Following questioning by the inspectors, the licensee tested the remaining three steam generator atmospheric steam dump valves. During that testing, the licensee found the steam generator B atmospheric steam dump valve would not consistently stroke and that there was a small amount of foreign material within the air operated valve positioner.

This finding was determined to be greater than minor because it impacted the Mitigating Systems Cornerstone attribute of human performance and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," this issue screened as very low safety significance because it was not a design or qualification deficiency that resulted in a loss of operability or functionality, did not create a loss of system safety function of a single train for greater than the technical specification allowed outage time and did not affect seismic, flooding, or severe weather initiating events. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because the licensee failed to use conservative assumptions when performing operability evaluations [H.1(b)] (Section 1R15).

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and the corrective action tracking number are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

AmerenUE operated the Callaway Plant near 100 percent power until October 18, 2009, when the unit was down powered to about 90 percent for main turbine control valve testing. Power was returned to near 100 percent on October 19, 2009. On December 10 and 12, 2009, power was reduced to 96 percent for troubleshooting and repairs to the atmospheric steam dumps and the turbine-driven auxiliary feedwater pump. The plant was maintained at full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- October 29, 2009, Emergency diesel generator train A heat exchangers (KJ system) during emergent extended out of service on emergency diesel generator train B due to unexpected need for extensive tube plugging
- November 3, 2009, Control room ventilation (GK system) during emergent out of service on control room air conditioning unit SGK04A
- November 5, 2009, Switchyard bus B and offsite power feeds (MA system) during unplanned loss of switchyard bus A

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 three partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

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:

- October 21, 2009, Fire Area A-16, Auxiliary building 2026" general elevation, component cooling water pump and heat exchanger area
- October 26, 2009, Fire Area A-6, Room 1127, Auxiliary building north stairwell, door open due to fire impairment 1805
- November 9, 2009, Fire Areas UNPH and USPH, Rooms U104 and U105, Essential service water pump rooms
- November 19, 2009, Fire Area A-17, Room 1409, South electrical penetration room
- December 8, 2009, Fire Area C-22, Room 3801, Upper cable spreading room

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.

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

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the Final Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- November 4, 2009, Auxiliary feedwater system pipe chase, rooms 1206 and 1207

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after AmerenUE failed to provide adequate design control measures for verifying the adequacy of the flooding analysis for the auxiliary feedwater pipe chase room 1206/1207.

Description. The inspectors identified that Callaway Plant failed to maintain an adequate design control calculation for the flooding analysis in the auxiliary feedwater pipe chase rooms. The flooding analysis of record M-FL-04, Revision 2, "Flooding Analysis for Rooms 1206 and 1207," was a recalculation of the design basis flood depth in auxiliary building rooms 1206 and 1207 due to a nonconservative error in the original calculation supplied by the architect engineer. This revised calculation, performed on December 4, 2001, determined that the 10-inch piping from the condensate storage tank going to the main condenser was the limiting source of potential flooding.

The room contains safety related transmitters used to swap the auxiliary feedwater pumps' suction source from the condensate storage tank to the essential service water system. These transmitters are located 22 inches above floor level. The 2001 calculation determined that the flood height would be 15.25 inches above the floor. The conduit supplying power to one of the transmitters was as low as 13.25 inches above the floor. When questioned by the inspectors whether the conduit was qualified for submergence the licensee indicated it was not, and declared the transmitter inoperable on November 10, 2009. This was documented in Callaway Action Request 200909417. A reanalysis of the flood input rate recognized a conservatism with pipe elbows allowing the licensee to regain approximately 500 gpm of decreased leakage/margin to ensure the flood height would not submerge the conduits. After the reanalysis the licensee obtained guidance from the conduit vendor to support that it was qualified for submergence.

The following incorrect licensee assumptions were discovered due to NRC inspectors' questions:

- The drain rate through an almost rectangular hatch to another room below room 1206/1027 had the incorrect hatch dimensions.

- The hatch had a ladder protruding through the opening, decreasing the available drain area.

- Two credited floor drains in the room had paint over the drain covers limiting the available drain area. This only impacted one drain path, however, as the drains' tee-in area was more limiting than one of the covers.

- The licensee initially assumed the floor drain covers were 18.5 square inches in area but actual measurements by the inspectors revealed that the licensee assumed area was based on a vendor model different from that installed.

- Because the bounding pipe was not seismically supported, a guillotine shear had to be one of the assumptions. However, the licensee calculation did not account for water entering the break from each end of the break. Both the condensate storage tank and the main condenser should have been considered as supplying the break.

- When asked to evaluate the main condenser as a flood source, the licensee believed that the condenser makeup line nozzles inside the condenser were above the water level in the main condenser. Later the licensee indicated that the condenser was required to be evaluated as a source.

- The analysis did choose the limiting pipe in the room as the bounding flooding source but did not document the assumption that the other pipes were bounded by the analysis, i.e., a lesser flood input rate. This was significant because a larger diameter pipe from the same source, the condensate storage tank, if subject to a guillotine shear, would have significantly raised the analyzed flood height. However, when questioned, the licensee research determined that it was

seismically supported and thus was not required to be analyzed as a guillotine shear.

- Section 3.6.1.1 of the licensee's FSAR indicated that "if a trip of the turbine-generator could be a direct cause of the postulated piping failure then the flood analysis needed to assume that offsite power was unavailable if a factor." This would not have been a negative impact on operability, if analyzed.

On December 16, 2009, the licensee reperformed the flooding analysis calculation, M-FL-04, Revision 5, including the main condenser as an additional source of flooding. This revision indicated that the flood level would be 17.9 inches above floor level. Leakage margin of 984 gpm was lost due to inclusion of the condenser as a source. This flood height supported a revised operability determination as operable.

Analysis. The performance deficiency associated with this finding was the incorrect calculation assumptions in the flooding analysis of record. This finding was similar to NRC Inspection Manual Chapter 0612 Appendix E, "Examples of Minor Issues," Example 3k, as the incorrect assumptions provided a reasonable doubt as to the operability of the auxiliary feedwater/condensate storage tank swapover transmitters. This finding was determined to be greater than minor because it impacted the Mitigating Systems Cornerstone attribute of design control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," this issue screened as very low safety significance because it was not a design or qualification deficiency that resulted in a loss of operability or functionality, did not create a loss of system safety function of a single train for greater than the technical specification allowed outage time, and did not increase the likelihood of a seismic, flooding, or severe weather initiating event. This finding was determined to not have a crosscutting aspect as the calculation of record was not reflective of current licensee performance.

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criteria III, "Design Control," required that AmerenUE establish measures to assure that applicable regulatory requirements and design bases be correctly translated into specifications and that design control measures be provided for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program. Contrary to the above, AmerenUE did not establish measures to assure that applicable regulatory requirements and the design basis of the flooding analysis for room 1206/1207 was translated into calculation M-FL-04, Revision 2, and failed to ensure that the design was verified. Because of the very low safety significance and AmerenUE's action to place this issue in their corrective action program as Callaway Action Request 200909631, this violation is being treated as a noncited violation in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000483/2009005-01, "Failure to Maintain an Adequate Flooding Analysis."

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On October 28, 2009, the inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for the emergency diesel generator following discovery by the licensee of need for additional tube plugging. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method outlined in EPRI Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines," the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one heat sink inspection sample as defined in Inspection Procedure 71111.07-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On October 14, 2009, the inspectors observed a crew of licensed operators perform a remediation requalification drill in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors

- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. 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 of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- October 20, 2009, Turbine-driven train of the auxiliary feedwater system
- November 4, 2009, Westinghouse 7300 card failure of the pressurizer pressure channel P-457

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations 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
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or 50.65(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 corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance 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:

- October 21, 2009, Planned elevated risk due to train B motor-driven auxiliary feedwater limiting condition for operation
- October 27, 2009, Planned elevated risk due to train B emergency diesel generator/essential service water out of service
- November 4, 2009, Elevated risk associated with an unplanned loss of switchyard bus A
- December 12, 2009, Elevated risk associated with an unplanned turbine-driven auxiliary feedwater pump technical specification equipment outage

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, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, 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 four maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- October 13, 2009, Callaway Action Request 200908737, Essential service water pipe stresses due to change to 2-inch stainless steel drain line for MP 90-1035B
- October 29, 2009, Callaway Action Request 200909091, Operability determination for emergency diesel generator B heat exchanger tube plugging beyond calculation limit
- November 15, 2009, Callaway Action Request 200900231, Operability determination made on emergency diesel generator following evidence of substantial heat exchanger tube thinning
- December 10, 2009, Callaway Action Request 200910153, Operability determination for blockage in air supplies to steam generator atmospheric steam dump valves
- December 14, 2009, Callaway Action Request 200910285, Operability determination for error in zone of influence determination for containment recirculation sumps

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and 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 personnel'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. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

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 five operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

Introduction. The NRC identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for two examples of failure to follow Procedure APA-ZZ-00500, Appendix 1, "Operability and Functionality Determinations."

Description. The inspectors identified two examples of failure to perform an adequate operability determination in accordance with licensee Procedure APA-ZZ-00500, Appendix1.

The first example occurred on January 14, 2009, following an immediate operability determination made in response to Callaway Action Request 200900231. That Callaway action request documented significant emergency diesel generator heat exchangers tube wall thinning during eddy current testing. The Callaway action request noted that the rate of degradation appeared to have increased from the period of 2006 to 2008 in contrast to the degradation rate from 2002 to 2006. The shift manager who reviewed Callaway Action Request 200900231 determined that despite the fact that all six heat exchangers for the emergency diesel generators exhibited a significant increase in the number of tubes with substantial tube wall thinning between 2006 and 2008, there was a reasonable expectation of operability based on Callaway engineering's evaluation of the issue. The engineering evaluation assumed a linear rate of degradation based on the rate observed from 2006 to 2008 and extrapolated forward to predict when heat exchanger tube plugging limits would be exceeded. No adjustment was made to the wear rate to account for the significant increase in tube wall thinning observed over time. The evaluation predicted that the emergency diesel generator train A would exceed its tube plugging limit for the jacket water heat exchanger in October 2011. The emergency diesel generator train B was predicted to exceed its tube plugging limit for the jacket water heat exchanger in October 2013.

The NRC resident inspectors reviewed Callaway Action Request 200900231 and associated immediate operability determination on January 22, 2009. The inspectors questioned if the assumed linear degradation rate was appropriate given that the rate of degradation appeared to have increased from the period of 2006 to 2008. The licensee determined that the linear rate was appropriate and consistent with industry guidance; however, no technical basis for the linear degradation rate was provided to the inspectors. Subsequent eddy current testing by the licensee on October 27, 2009, found that the assumed linear degradation rate was nonconservative. During work performed under Job 08504568.500, the licensee discovered that twenty additional tubes in the emergency diesel generator train B jacket water heat exchanger needed to be plugged

due to excessive tube wall thinning. Following review of the work performed in October 2009, the inspectors determined that the licensee failed to provide a reasonable expectation of operability for the degraded condition identified in Callaway Action Request 200900231 consistent with the guidance of Regulatory Information Summary 2005-020, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," and licensee Procedure APA-ZZ-00500, Appendix 1. Specifically, the licensee assumed a nonconservative linear rate of degradation for demonstrating emergency diesel heat exchanger operability despite empirical data that suggested the rate increased as a function of time.

Long term corrective actions were initiated by the licensee under Callaway Action Request 200909091 which includes replacement of all emergency diesel heat exchangers during the licensee's upcoming refueling outage.

The second example occurred on December 10, 2009, following initiation of Callaway Action Request 200910153 which documented that the steam generator C atmospheric steam dump valve (ABPV0003) would not repeatedly stroke to the same position. The Callaway action request documented that Callaway maintenance staff purged the air operated valve positioner which caused the valve to stroke consistently. The licensee determined that some amount of foreign material within the valve positioner was the most likely cause of the repeatability issue with the valve and that purging the positioner eliminated the foreign material.

The inspectors reviewed Callaway Action Request 200910153 and the work performed to address the repeatability issues with the steam generator C atmospheric steam dump valve. The inspectors noted that an immediate operability determination was not made on the identified degraded condition of foreign material within the air supply to the steam generator atmospheric steam dump valves. Since all four steam generator atmospheric steam dump valves share a common instrument air supply, the inspectors determined that the licensee failed to identify what structures, systems, and components were affected by the degraded condition in Callaway Action Request 200910153. Additionally, the inspectors found that the licensee failed to evaluate the extent of condition for all similarly affected structures, systems, and components consistent with the guidance of Regulatory Information Summary 2005-020 and licensee Procedure APA-ZZ-00500, Appendix 1.

Following questioning by the inspectors, the licensee tested the remaining three steam generator atmospheric steam dump valves. During that testing, the licensee found steam generator B atmospheric steam dump valve would not consistently stroke. During troubleshooting, the licensee found a small amount of foreign material within the air operated valve positioner. The licensee also found the positioner was not functioning properly. The licensee addressed the issues with the steam generator B atmospheric steam dump valve in Callaway Action request 200910197.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to follow procedures associated with operability and functionality determinations. This finding was determined to be greater than minor because it

impacted the Mitigating Systems Cornerstone attribute of human performance and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," this issue screened as very low safety significance because it was not a design or qualification deficiency that resulted in a loss of operability or functionality, did not create a loss of system safety function of a single train for greater than the technical specification allowed outage time and did not affect seismic, flooding, or severe weather initiating events. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because the licensee failed to use conservative assumptions when performing operability evaluations [H.1(b)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," specifies that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, on January 14, 2009, and again on December 10, 2009, Callaway plant operators failed to adequately perform activities affecting quality in accordance with procedures appropriate to the circumstances. Specifically, Callaway Plant operators failed to establish there was a reasonable expectation of operability of structures, systems, and components following identification of a degraded condition in accordance with Step 4.1 of Procedure APA-ZZ-00500, Appendix 1, "Operability and Functionality Determinations." Because of the very low safety significance and AmerenUE's action to place this issue in their corrective action program as Callaway Action Request 200910560, this violation is being treated as a noncited violation in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000483/2009005-02, "Two Examples of Failure to Follow Operability Determination Procedure."

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

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

- October 14, 2009, Motor-driven auxiliary feedwater pump A after replacing pump outboard bearing retainer ring, Job 09006253
- October 28, 2009, Valve EFHV0038, train B essential service water return to the ultimate heat sink, Job 05510576
- November 12, 2009, Postmaintenance test of emergency diesel generator train A following planned heat exchanger work Job 09511215
- November 24, 2009, Diesel-driven fire pump B postmaintenance test, Job 09511510

- December 8, 2009, Postmaintenace test on loop 4 over temperature delta temperature following card replacement, Job 09008090

- December 9, 2009, Postmaintenace test of valve ABPV0003, steam generator C atmospheric steam relief valve, Job 08503229

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 (as applicable):

- 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, 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 postmaintenance 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 postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance 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:

- Preconditioning

- Evaluation of testing impact on the plant

- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

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

- September 26, 2009, Jobs 09507184 and 09507185, Component cooling water train B valve inservice test
- October 2, 2009, Job 09506551, Routine surveillance testing of reactor trip breaker train B trip actuating device
- October 6, 2009, Job 08503601, Routine surveillance ISL-SE-00N41 on power range nuclear instrument channel N41
- October 27, 2009, Routine surveillance to perform new fuel receipt at the spent fuel pool
- November 25, 2009, Jobs 09508560, 09511746 and 08500895, Routine surveillance of emergency diesel generator single bank air start

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

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

b. Findings

Introduction. The inspectors reviewed a self-revealing Green noncited violation of Technical Specification 5.4.1.a, "Procedures," after maintenance on power range nuclear instrument N41 resulted in an unanticipated plant transient.

Description. On October 6, 2009, the licensee performed Procedure ISL-SE-00N41 to calibrate power range nuclear instrument N41. During performance of Step 6.4.6.a.4, the power mismatch bypass switch was placed to "operate." Upon performance of this step, control rods unexpectedly inserted ten and a half steps at a rate of 72 steps per minute. The negative reactivity that was inserted due to the inward rod motion caused reactor power to drop approximately one percent power and pressurizer pressure to drop from 2235 psig to approximately 2223 psig. In response to the plant transient, the reactor operator verified that no turbine runback was occurring then placed the control rods in manual to terminate the undesired rod motion. After consulting with reactor engineering, reactor power and reactor coolant system pressures and temperatures were then restored to nominal values.

Subsequent review by the licensee determined that the cause of the undesired rod motion was the rod bank selector switch being left in "auto" rather than "other than auto," as required by the procedure. The reactor operator should have placed the rod bank selector switch in "manual" during Step 6.2.2 of Procedure ISL-SE-00N41. When the instrumentation and control technicians performed Step 6.4.6.a.4, test voltages were applied to power range channel N41. The rod control system sensed these voltages as a power mismatch between turbine power and reactor power. With the rod bank selector switch in automatic, the power mismatch signal caused rods to step in at the maximum rate. In addition to the human error made by the reactor operator, the licensee determined that a poorly worded procedure contributed to the event. The licensee initiated Callaway Action Request 200908596 to address the causes of the unanticipated plant transient.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to follow procedures associated with calibration of power range nuclear instrument N41. This finding was determined to be greater than minor because it impacted the Initiating Events Cornerstone attribute of human performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," this finding was determined to be of very low safety significance since it did not affect the technical specification limit for reactor coolant system leakage or mitigation systems safety function, did not contribute to both the likelihood of a reactor trip and mitigation equipment or functions not being available, and did not increase the likelihood of a fire or internal/external flooding. This finding had a crosscutting aspect in the area of human performance associated with the work practices component because the reactor operator who failed to place the rod bank selector switch into the procedurally required position failed to use human error prevention techniques, such as self- and peer-checking [H.4(a)].

Enforcement. Technical Specification 5.4.1.a required written procedures be established, implemented, and maintained as recommended by Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 9, specifies that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures or documented instructions appropriate to the circumstances. Contrary to the above, on October 6, 2009, operators failed to perform maintenance affecting the performance of safety-related equipment in accordance with written procedures. Specifically, operators failed to follow Step 6.2.2 of Procedure ISL-SE-00N41 which required the reactor operator to verify the rod bank selector switch was in a position other than automatic. With the control rods in automatic, an unanticipated plant transient occurred when the power mismatch bypass switch was placed in operate. Because of the very low safety significance and AmerenUE's action to place this issue in their corrective action program as Callaway Action Request 200908596, this violation is being treated as a noncited violation in accordance with Section VI.A.1 of the Enforcement Policy:
NCV 05000483/2009005-03, "Plant Transient Caused by Human Error During Power Range Nuclear Instrument Surveillance."

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2009 biennial emergency plan exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario simulated an initial earthquake with aftershocks, a loss of offsite power, diesel generator failures leading to a station blackout condition, core damage, a reactor coolant system break inside containment, and an unfiltered and unmonitored radiological release to the environment via a damaged containment equipment hatch, to demonstrate the licensee personnel's capability to implement their emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations, in the simulator control room and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementing procedures associated with operation of the

licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors compared the observed exercise performance with the requirements in the facility emergency plan, 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, and with the guidance in the emergency plan implementing procedures and other federal guidance.

The inspectors attended the postexercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.01-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

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 third Quarter 2009 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 of significance were identified.

.2 Mitigating Systems Performance Index - Heat Removal System (MS08)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator for the period from the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors

reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 1, 2008, through September 30, 2009, 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 Nuclear Energy Institute 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 heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for the period from the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. 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 October 1, 2008, through September 30, 2009, 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 Nuclear Energy Institute 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 residual heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors sampled licensee submittals for the drill and exercise performance, performance indicator for the period from the July 2008 through September 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator; assessments of performance indicator opportunities during predesignated control room simulator training sessions, performance during the 2009 biennial exercise, and performance during other drills.

These activities constitute completion of the drill/exercise performance sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.5 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors sampled licensee submittals for the emergency response organization drill participation performance indicator for the period from the July 2008 through September 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, rosters of personnel assigned to key emergency response organization positions, and exercise participation records.

These activities constitute completion of the emergency response organization drill participation sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.6 Alert and Notification System (EP03)

a. Inspection Scope

The inspectors sampled licensee submittals for the alert and notification system performance indicator for the period from the July 2008 through September 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator and the results of periodic alert notification system operability tests.

These activities constitute completion of the alert and notification system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

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

.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 of significance 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 corrective action program. 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 of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of July 1, 2009, through December 31, 2009, although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of one semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Observations and Findings

The inspectors found that the licensee identified the following trends of significance:

- CAR 200904295, Emerging trend in workman protection assurance preparation errors
- CAR 200908262, Adverse trend in maintenance worker practices
- CAR 200910270, Potential adverse trend in calculation preparations

The resident inspectors concurred with these items as being the noteworthy trends needing additional corrective actions. Additionally the inspectors noted an adverse trend in reliability of steam generator atmospheric steam dump valves. The inspectors discovered that the licensee has experienced multiple failures of the current to pressure positioners used for the operation of the valves.

No findings of significance were identified.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors focused on corrective actions associated with:

- October 19, 2009, Change in the reporting of the mitigating systems performance index occurrence associated with the emergency diesel generator train A failure to run on December 24, 2008
- October 27, 2009, High number of degraded tubes in emergency diesel generator B jacket water heat exchanger
- December 7, 2009, Failure to start of the technical support center emergency diesel generator on December 11, 2008
- December 10, 2009, Cumulative effects of operator workarounds

These activities constitute completion of four selected follow-up inspection samples (one of which was cumulative review of operater workarounds) as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report 05000483/2008-001-01: Containment Cooler Inoperability

On March 26, 2008, containment air cooler A fan shut down when shifted from fast to slow speed. The licensee determined that operation of containment air coolers in fast speed, during a period of higher than normal containment pressure, would challenge the fast speed thermal overload setpoint. Additionally, since the overload contacts are wired in series, containment air coolers were determined to experience a complete loss of control power following a trip from fast speed. The licensee analyzed the potential impact of the containment cooler design vulnerability against design basis accident scenarios. The licensee determined that a hot zero power main steam line break results in a delayed safety injection signal allowing the fan motor overloads to trip prior to being shed from the load sequencer. In this scenario, utilizing actual plant conditions, the peak containment pressure would not exceed the 48.1 psig limit described in the Final Safety Analysis Report. To address the design deficiency associated with the containment air cooler control circuitry, the licensee completed a modification in April 2008, to reconfigure the circuit such that tripping of the fast speed overloads would not impact the safety related slow speed function of the containment air coolers.

The licensee submitted a licensee event report for the cooler inoperability on May 22, 2008. A supplement to the original licensee event report was submitted on September 29, 2009, in response to Severity Level IV noncited violation 05000483/2009004-02 which documented that the licensee failed to report the event in accordance with 10 CFR 50.73(a)(2)(v) any event or condition that could have prevented the fulfillment of a safety function. The inspectors reviewed the licensee's most recent submittal and determined that the report adequately documented the summary of the event including the potential safety consequences, causes of the event, and corrective actions required to address the performance deficiency. No additional findings were identified. This licensee event report is closed.

.2 (Closed) Licensee Event Report 05000483/2008-002-01: Void Found in Line EM-023-HCB – Residual Heat Removal Pump A to Safety Injection Pumps

On May 21, 2008, Callaway Plant personnel discovered a 6.6 cubic foot void of air within safety injection system common suction piping Line EM023-HCB – 6". The volume of air exceeded the allowable void fraction of 2.1 cubic feet required for operability. This voided piping, determined to have existed for over a year, was caused by relief valve maintenance on Valve EM8858A performed on May 7, 2007. The maintenance restoration failed to perform a fill and vent to ensure the suction pipe was full of water. The void was removed by venting the piping on May 21, 2008.

The licensee submitted a Licensee Event Report for the void found in line EM-023-HCB - 6" on December 23, 2008. A supplement to the original licensee event report was submitted on November 5, 2009, in response to Severity Level IV noncited violation 05000483/2009004-02 which documented that the licensee failed to report the

event in accordance with 10 CFR 50.73(a)(2)(v) any event or condition that could have prevented the fulfillment of a safety function. The inspectors reviewed the licensee's most recent submittal and determined that the report adequately documented the summary of the event including the potential safety consequences, causes of the event, and corrective actions required to address the performance deficiency. No additional findings were identified. This licensee event report is closed.

.3 (Closed) Licensee Event Report 05000483/2009-002-01: Turbine-Driven Auxiliary Feedwater Pump Failed to Start During Surveillance Test

On May 25, 2009, the Callaway plant turbine-driven auxiliary feedwater pump failed to start during a planned surveillance run. The licensee determined that the failure of the turbine-driven auxiliary feedwater pump was due to an inadequately lubricated trip throttle valve. The valve was inadequately lubricated because the licensee inappropriately closed the lubrication portion of Procedure MPM-FC-QK001, "Auxiliary Feedwater Pump Turbine Annual Inspection," during Refueling Outage 16. Subsequent review by the licensee determined that though the actual timing of when the valve would have failed after the last successful surveillance test was unknown, it was reasonable to conclude that the turbine-driven auxiliary feedwater pump was inoperable for a period greater than the technical specification allowed completion time. Consequently, the event resulted in a reportable event per the requirements of 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the plant's technical specifications. Additionally, since the motor-driven auxiliary feedwater pump train A was inoperable just prior to discovery of the degraded condition, the event was determined to be reportable per 10 CFR 50.73(a)(2)(v), as a condition that could have prevented fulfillment of a safety function and 10 CFR 50.73(a)(2)(ii)(B), as an unanalyzed condition that significantly degraded plant safety. The licensee submitted a licensee event report on July 21, 2009. A supplement to the original licensee event report was submitted on November 5, 2009, to provide additional causes of the valve failure discovered during the licensee's investigation. The inspectors reviewed the licensee's submittal and determined that the report adequately documented the summary of the event including the potential safety consequences and corrective actions required to address the performance deficiency. The inspectors identified that an additional cause of an improperly installed thrust washer constituted a licensee identified violation of Technical Specification 5.4.1.a, "Procedures." The enforcement aspects of the violation are discussed in Section 4OA7 of this report. This licensee event report is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with Callaway's security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings

Exit Meeting Summary

On October 23, 2009, the emergency preparedness inspectors presented the results of the inspection of the licensee's biennial preparedness exercise to Mr. D. Neterer, Plant Director, and other members of the licensee's 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.

On December 30, 2009, the resident inspectors presented the inspection results to Mr. Fadi Diya, Vice President, Nuclear Operations,m 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.

4OA7 Licensee-Identified Violations

The following violation is of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a noncited violation.

- Technical Specification 5.4.1, "Procedures," required that written procedures be established and implemented covering activities specified in Appendix A, "Typical Procedures for Pressurized Water Reactors," of Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a, required procedures for performance of maintenance. Contrary to the above, on September 13, 2007, work instruction W219154 for the rebuild of the turbine-driven auxiliary feedwater pump trip throttle valve was not followed. Specifically, the beveled thrust washer within the valve's split coupling was installed bevel side up contrary to the work instructions. Consultation with the vendor confirmed that the installation error would add significant friction to the operation of the valve. This finding was entered in the licensee's corrective action program as Callaway Action Request 200904216. This finding is greater than minor because it was associated with the Mitigating Systems Cornerstone attribute of procedural quality and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the issue screened as very low safety significance because it was not a design or qualification deficiency that resulted in a loss of operability or functionality, did not create

a loss of system safety function of a single train for greater than the technical specification allowed outage time and did not affect seismic, flooding, or severe weather initiating events.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

R. Barton, Training Manager
E. Bradley, Manager, Protective Services
G. Bradley, Manager, Operations
K. Bruckerhoff, Supervisor, Emergency Preparedness
J. Cortez, Training Supervisor
R. Derleth, Supervisor, Training
F. Diya, Vice President Nuclear Operations
T. Elwood, Supervising Engineer, Regulatory Affairs/Licensing
J. Geyer, Manager, Radiation Protection
K. Gilliam, Supervisor, Radiation Protection Operations
L. Graessle, Director, Operations Support
T. Hermann, Manager, Maintenance
G. Hurla, Supervisor, Radiation Protection Operations
L. Kanuckel, Manager, Plant Engineering
S. Kochert, Assistant Operations Manager
P. McKenna, Outages Manager
D. Lantz, Assistant Manager Operations Training
S. Maglio, Assistant Manager, Regulatory Affairs
K. Mills, Manager, Quality Assurance
D. Neterer, Plant Director
J. Patterson, Manager, Planning, Scheduling and O utages
S. Petzel, Engineer, Regulatory Affairs
L. Sandbothe, Manager, Plant Support
R. Tiefenauer, Training Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000483/2009005-01	NCV	Failure to Maintain an Adequate Flooding Analysis (Section 1R06)
05000483/2009005-02	NCV	Two Examples of Failure to Follow Operability Determination Procedure (Section 1R15)
05000483/2009005-03	NCV	Plant Transient Caused by Human Error During Power Range Nuclear Instrument Surveillance (Section 1R22)

Closed

05000483/2008-001-01	LER	Containment Cooler Inoperability (Section 4OA3)
05000483/2008-002-01	LER	Void Found in Line EM-023-HCB – Residual Heat Removal Pump A to Safety Injection Pumps (Section 4OA3)
05000483/2009-002-01	LER	Turbine-Driven Auxiliary Feedwater Pump Failed to Start During Surveillance Test (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

PROCEDURES

NUMBER	TITLE	REVISION / DATE
ETP-GK-0002B	Control Room Habitability Test B Train	2
OSP-GL-0001B	Auxiliary Building Train B Negative Pressure Test	9
OSP-GK-0002B	Train B Control Room Ventilation and Pressure Test	13
OSP-GK-0003A	Train A Control Room Ventilation Damper Stroke Test, Job 05518071	December 28, 2008
OSP-GK-0003B	Train B Control Room Ventilation Damper Stroke Test, Job 05511047	June 3, 2007

DRAWINGS

NUMBER	TITLE	REVISION
M-22GK01	Piping and Instrumentation Diagram Control Building HVAC	16
M-22GK02	Piping and Instrumentation Diagram Control Building HVAC	18
M-22GK03	Piping and Instrumentation Diagram Control Building HVAC	21

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
T61.0110.6	Systems Ventilation Systems Lesson Plans – Primary GG/GK/GL	2008

Section 1R05: Fire Protection

PROCEDURES

NUMBER	TITLE	REVISION / DATE
APA-ZZ-00703	Fire Protection Operability Criteria and Surveillance Requirements	19
FPP-ZZ-00001	Auxiliary Building Prefire Strategies	22
FPP-ZZ-00004	Control Building and Communications Corridor Prefire Strategies	15
FPP-ZZ-00007	Miscellaneous Buildings Inside the Protected Area Prefire Strategies	12
OSP-KC-03003	Fire Main Flow Test	2

Section 1R06: Flood Protection Measures

DRAWINGS

NUMBER	TITLE	REVISION / DATE
M-23AL01	Piping Isometric Auxiliary Feedwater Pumps Suction Piping	12
M-23AP01	Piping Isometric Condensate Storage and Transfer System Turbine Building	4
M-23AP02	Piping Isometric Condensate Storage and Transfer System Turbine Building	2
	JOSAM Vendor Drawing for Area Floor Drains	

CALLAWAY ACTION REQUESTS

200909064 200909417 200909631

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
Regulatory Guide 1.61	Damping Values for Seismic Design of Nuclear Power Plants	March 2007, Revision 1
Calculation M FL-04	Flooding Analysis for Room 1206/1207	2-5

Section 1R07: Heat Sink Performance

DRAWINGS

NUMBER	TITLE	REVISION / DATE
M-1055-000212	Heat Exchanger Tube Tracking Drawing, Diesel Generator B, Intercooler Heat Exchanger EKJ03B	2
M-1055-00214	Heat Exchanger Tube Tracking Drawing, Diesel Generator B, Lube Oil Cooler EKJ04B	2
M-1055-00216	Heat Exchanger Tube Tracking Drawing, Diesel Generator B, Jacket Water Heat Exchanger EKJ06B	2
M-1055-00211	Heat Exchanger Tube Tracking Drawing, Diesel Generator A, Intercooler Heat Exchanger EKJ03A	2
M-1055-00213	Heat Exchanger Tube Tracking Drawing, Diesel Generator A, Lube Oil Cooler EKJ04A	2
M-1055-00215	Heat Exchanger Tube Tracking Drawing, Diesel Generator A, Jacket Water Heat Exchanger EKJ06A	2

CALLAWAY ACTION REQUESTS

200900231 200909091

CALCULATIONS

NUMBER	TITLE	REVISION / DATE
KJ-10	Determine Tube Plugging Limits for DG Intercooler Heat Exchangers, EKJ03A/B, DG Jacket Water Heat Exchangers, EKJ06A/B, and the Lube O il Coolers, EKJ04A/B	1
KJ-10, Addendum 1	Determine Plugging Limits for EDG Heat Exchangers Based on ESW Flow R ate of 1200 gpm	1
ARC-809	Archon Engineering Calculation, Subject: Evaluate Heat Exchanger Tube Thinning	October 29, 2009 Revision 0

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
	A EDG Heat Exchanger Tube Plugging Summary from 11/11-11/12/09 A EDG LCO Outage	
	EKJ03A (A EDG Intercoller HX) 11/11/09 Inspection	
	EKJ04A (A EDG LO CLR) 11/11/2009 Inspection	
	EKJ06A (A EDG Jacket Water Hx) 11/11/2009 Inspection	
	EKJ06A (A EDG JACKET WATER HX) 11/11/2009 Inspection	
	EKJ04A (A EDG Lo CLR) 11/11/2009 Inspection	
	EKJ03A (A EDG Intercooler HX) 11/11/09 Inspection	
EPRI Report TR-110392	Run/Repair/Replace Decision	
ET001	Integrated Technologies, Inc., Procedure for Analog and Digital Eddy Current Inspection of Heat Exchanger Tubes	2
	Integrated Technologies, Inc, Certificate of Qualification for Level II Inspector	September 14, 2007
	Integrated Technologies, Inc, Certificate of Qualification for Level III-A Inspector	August 8, 2006
CB-090062	Corestar International Corporation Equipment Calibration Certificate	July 15, 2009

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

NUMBER	TITLE	REVISION / DATE
E-0	Reactor Trip or Safety Injection	12
EIP-ZZ-00101	Classification of Emergencies	44
FR-H.1	Response to Loss of Secondary Heat Sink	10

Section 1R12: Maintenance Effectiveness

PROCEDURES

NUMBER	TITLE	REVISION
EDP-ZZ-01128	Maintenance Rule Program	12
EDP-ZZ-01128, Appendix 1	SSCs in the Scope of the Maintenance Rule at Callaway	4
EDP-ZZ-01128, Appendix 2	Summary of SSC Performance Criteria	13
EDP-ZZ-01128, Appendix 4	Maintenance Rule System Functions	0

CALLAWAY ACTION REQUESTS

200811621 200908127 200909313

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

NUMBER	TITLE	REVISION / DATE
EDP-ZZ-01129	Callaway Plant Risk Assessment	17
EDP-ZZ-01129 Appendix 2	Risk Management Actions for Planned Risk-Significant Activities	16

CALLAWAY ACTION REQUESTS

200909699

Section 1R15: Operability Evaluations

PROCEDURES

NUMBER	TITLE	REVISION / DATE
APA-ZZ-00500, Appendix 1	Operability and Functionality Determinations	9
APA-ZZ-00500, Appendix 19	Common Cause Evaluation	2

DRAWINGS

NUMBER	TITLE	REVISION
M-1055-00211	Heat Exchanger Tube Tracking Drawing Diesel Generator A Intercooler Heat Exchanger EKJ03A	1
M-1055-00213	Heat Exchanger Tube Tracking Drawing Diesel Generator A Lube Oil Cooler EKJ04A	1
M-1055-00215	Heat Exchanger Tube Tracking Drawing Diesel Generator A Jacket Water Heat Exchanger EKJ06A	1

CALLAWAY ACTION REQUESTS

200509587	200900231	200908133	200909032	199803542
200107112	200107143	200207470	200504163	200603853
200705410	200804337	200900231	200902419	200909996
200900231	200910313	200910244	200910285	200910197
200910153				

JOBS

09500903

Section 1R19: Postmaintenance Testing

PROCEDURES

NUMBER	TITLE	REVISION
ISL-AB-000P3	Loop-Press; S/G C PORV	7
OSP-AL-P001A	Motor Driven Aux. Feedwater Pump “A” Inservice Test – Group A	52
OSP-EF-V001B	ESW Train B Valve Operability	41
OSP-KC-00001	Fire Pump Starting and Fire Water Storage Tank Inspection	22

DRAWINGS

NUMBER	TITLE	REVISION / DATE
J-110-00220	Main Steam System Atmospheric Stream Dump Steam Generator C	7

CALLAWAY ACTION REQUESTS

200909996

JOBS

09511215 09006253 09008090 08503229

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
J-110-00388	Instruction Manual for Major Electrical Instrument and Control	44
417945	Material Receipt Inspection Report	2

Section 1R22: Surveillance Testing

PROCEDURES

NUMBER	TITLE	REVISION / DATE
ISL-SE-00N41	Loop-Nuc; Nuc Instrm Pwr Rng N41	27
OTO-SE-00001	Nuclear Instrument Malfunction	19
OTO-SF-00001	Rod Control Malfunctions	14
OSP-EG-V001B	CCW Train B Valve Inservice Test	36
OSP-EG-V002B	CCW Train B Containment Isolation Valve Stroke Test	12
OSP-SB-0001B	Reactor Trip Breaker B Trip Actuating Device Operational Test	15

DRAWINGS

NUMBER	TITLE	REVISION / DATE
M-22 EF02	Essential Service Water System	71

CALLAWAY ACTION REQUESTS

200908596	199700082	200207880	200908222	200909683

JOBS

09506551	09507184	09507185

Section 1EP1: Exercise Evaluation

PROCEDURES

NUMBER	TITLE	REVISION / DATE
EIP-ZZ-00101	Classification of Emergencies	45
EIP-ZZ-00102	Emergency Implementing Actions	42
EIP-ZZ-00201	Notifications	46

PROCEDURES

NUMBER	TITLE	REVISION / DATE
EIP-ZZ-00212	Protective Action Recommendations	23
EIP-ZZ-00240	Technical Support Center Operations	39
EIP-ZZ-00240	Addendum A, Emergency Coordinator Checklist	4
EIP-ZZ-C0010	Emergency Operations Facility Operations	37
EIP-ZZ-1211T	Accident Dose Assessment	0

CALLAWAY ACTION REQUESTS

200809554	200810004	200810305	200811544	200811832
200812119	200812665	200812996	200900116	200900349
200901297	200901407	200903342	200904244	200904366
200905662	200905978	200906689	200908700	200908875
200908938	200908939	200908940	200908941	200908942
200908943	200908985	200908987	200908988	200909000
200909003	200900189	200902888	200903572	200903604
200904088	200904195	200904295	200906288	200809151
200901363	200906073	200900178	200908841	200909529
200910270				

DRILL SCENARIOS AND DRILL AND EXERCISE EVALUATION REPORTS FOR DRILLS CONDUCTED:

May 5, 2005	August 8, 2007	December 5, 2007
January 14, 2008	January 16, 2008	January 23, 2008
January 30, 2008	February 6, 2008	February 13, 2008
February 22, 2008	April 19, 2008	April 30, 2008
May 7, 2008	May 14, 2008	May 21, 2008
May 28, 2008	June 4, 2008	June 27, 2008
August 19, 2008	September 17, 2008	December 10, 2008
January 14, 2009	January 21, 2009	January 28, 2009

PROCEDURES

NUMBER	TITLE	REVISION / DATE
February 4, 2009	February 11, 2009	February 18, 2009
April 22, 2009	May 11, 2009	May 20, 2009
May 27, 2009	June 3, 2009	June 10, 2009
June 17, 2009	August 18, 2009	

JOBS

08005853	08008668	08008935	08009435	08511140
09005147				

Section 4OA1: Performance Indicator Verification

PROCEDURES

NUMBER	TITLE	REVISION
APA-ZZ-00500	Mitigating Systems Performance Index (MSPI)	2
OSP-BB-00009	RCS Inventory Balance	5
ODP-ZZ-00029	RCS Leakage Action Level Guideline	0
EIP-ZZ-00101	Classification of Emergencies	44, 45
KSP-ZZ-00110	Siren Alert System Testing	6
EIP-ZZ-00201	Notifications	45, 46
EIP-ZZ-00212	Protective Action Recommendations	22, 23
KDPZZ-02000	NRC Performance Indicator Data Collection	14, 15

CALLAWAY ACTION REQUESTS

200811832	200812119	200812665	200812996	200901297
200908700	200810475	200904216	2008010598	200810933
200812985	200905313	200909687	200908780	200909687

JOBS

07509416	08005758	08008772	08506709

MISCELLANEOUS DOCUMENTS

TITLE	REVISION / DATE
Callaway Plant Radiological Emergency Response Plan	34
Material Safety Data Sheet 50200-9, “Shell Turbo(r) 0132	February 1, 1993

Section 4OA2: Identification and Resolution of Problems

PROCEDURES

NUMBER	TITLE	REVISION
APA-ZZ-0015	Conduct of Operations – Chemistry & Radwaste	22
APA-ZZ-00500	Appendix 3, Past Operability Determination	0
ODP-ZZ-00001	Operations Department – Code of Conduct	51
OTN-EG-00001	Component Cooling Water System	41
OTO-BB-00002	RCP Off-Normal	26
OTS-SA-00001	Operation of Engineered Safety Feature Actuation System	15

DRAWINGS

NUMBER	TITLE	REVISION
M-22AD02	Piping and Instrumentation Diagram Condensate System	31
M-22AD01	Piping and Instrumentation Diagram Condensate System	17
M-22AN01	Piping and Instrumentation Diagram Demineralized Water Storage and Transfer System	37
Wiring Diagram 204827	Kim Hot Start	

Wiring Diagram 3015146	Automatic Starting Control

CALLAWAY ACTION REQUESTS

200200094	200307344	200307381	200404886	200404898
200405354	200508109	200800455	200811832	200812119
200812665	200900231	200901297	200905978	200908084
200908112	200908132	200908700	200909091	200909474
200909683	200909684			

JOBS

08005853	08008935	08009435	08511140	09005147

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION
RFR 09608A	Evaluate CCW HX Outlet High Temperature Alarm Setpoint	A
MP 08-0035	Install Additional Emergency Lights for Post Fire Safe Shutdown	0
MP 09-0067	Install TDAFP Room Platform for better access to FCHV0312	0
ULNRC-04868	Docket Number 50-483 Union Electric Company Callaway Plant Application of Proprietary Leak-Before-Break (LBB) Methodology Reports and Draft Regulatory Guide DG-1108	June 27, 2003
ET001	Procedure for Analog and Digital Eddy Current Inspection of Heat Exchanger Tubes, Integrated Technologies	2
Calculation KJ-10	Determine Tube Plugging Limits for DG Heat Exchangers	0
Calculation KJ-10	Determine Tube Plugging Limits for DG Heat Exchangers	1
Calculation ARC-809	Evaluate Heat Exchanger Tube Thinning, Archon Engineering	0
Calculation KJ-461	Heat Exchanger Tube Minimum Wall,	0

Calculation Report SN#PHX-0000	EKJ04A/B – EDG Lube Oil Coolers, Proto-Power Corporation	July 2009
Calculation Report SN#PHX-1026	EDG Jack Water Heat Exchangers, Proto-Power Corporation	August 2002
	Record of Eddy Current Inspection of EDG A at Callaway	March 2008
	Record of Eddy Current Inspection of EDG B at Callaway	May 2008
03822-TR-001	Failure Analysis of EDG A Jacket Water cooler Tube Samples, Wolf Creek Generating Station, Altran Corporation	October 2003

Section 4OA3: Event Follow-Up

CALLAWAY ACTION REQUESTS

200802264 200804000 200904216

Section 4OA5: Other Activities

CALLAWAY ACTION REQUESTS

200908158

Section 4OA7: Licensee-Identified Violations

CALLAWAY ACTION REQUESTS

200904216