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

October 21, 2009

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 05000483/2009004

Dear Mr. Heflin:

On September 23, 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 September 21, 2009, with Mr. Fadi Diya, Vice President, Nuclear Operations, and other members of your staff.

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

This report documents two NRC-identified findings of very low safety significance. Both of these findings were determined to involve violations of NRC requirements. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are 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 Boulevard, 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. 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/readingrm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Vincent G. Gaddy, Chief
Project Branch B
Division of Reactor Projects

Docket: 50-483
License: NPF-30

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NRC Inspection Report 05000483/2009004
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000483
License:	NPF-30
Report:	05000483/2009004
Licensee:	Union Electric Company
Facility:	Callaway Plant
Location:	Junction Highway C and Highway O Fulton, MO
Dates:	June 24, 2009, through September 23, 2009
Inspectors:	D. Dumbacher, Senior Resident Inspector J. Groom, Resident Inspector Clyde Osterholtz, Senior Operations Engineer Chris Steely, Operations Engineer G. M. Vasquez, Senior Health Physicist
Approved By:	V. Gaddy, Chief, Project Branch B Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000483/2009004: 6/24-9/23/2009; Callaway Plant, Integrated Resident and Regional Report; Flood Protection Measures and Event Follow-up.

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region based inspectors. Two noncited violations 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: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," associated with the licensee's failure to take prompt corrective actions prevent continuous submergence of essential service water pump kerite insulated power cables. The continuously submerged environment for these cables existed because the two vaults containing these cables (MH-01N and MH-01S) had inadequate seals needed to protect the vaults from incoming surface water. Callaway Action Request 200201916 stated that all medium voltage cables of concern were located more than 4 feet above the basemat of the vault and thus were not in a submerged condition. The Callaway action request noted that the seals at the top lid were the source of water intrusion and that the seal design was inadequate. On July 9 and 22, 2009, the resident inspectors, along with Callaway plant engineers, inspected the two essential service water underground vaults. The north vault (train A) was found to have water covering the two safety related upper cable trays. Contrary to the Callaway Action Request 200201916 evaluation, the cable trays were about 2.5 feet and 3.5 feet from the basemat of the vault floor. During these 2009 inspections it was noted that the same lid design deficiency identified in Callaway Action Request 200201916 still existed. This led to the discovery that the Callaway Action Request actions from 2002 had not been completely performed. The only significant corrective action had been to increase the inspection frequency to once every three years.

  The licensee has subsequently taken measures to improve the seals and written Callaway Action Request/Request for Resolution 200905838 to further evaluate this issue. This finding is more than minor because it affected the Mitigating Systems Cornerstone attribute of design control for ensuring the availability, reliability, and capability of safety systems. Using Manual Chapter 0609.04, "Phase 1 – Initial screening and Characterization of Findings," this finding was determined to be of very low safety significance because the degraded seals were a design or qualification deficiency confirmed not to result in loss of operability. The inspectors determined that the finding has no crosscutting aspect as the performance deficiencies were not

reflective of current performance. The licensee entered this item into their corrective action program as Callaway Action Request 200908855 (Section 1R06).

- SLIV. The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.73(a)(2)(v), "Licensee Event Report System," for a failure to report two examples of safety system functional failures in licensee event reports within 60 days after discovery of events requiring a report. The two examples were:

  - March 26, 2008, discovery that operation of containment air coolers in fast speed, during a period of higher than normal containment pressure, could open the air coolers' fast speed thermal overload device rendering all the coolers incapable of automatically restarting in slow speed

  - May 21, 2008, discovery of a 6.6 cubic foot void of air in the common suction piping capable of affecting the function of both of the safety injection system pumps

  For each example, the inspectors reviewed the licensee's reportability evaluation and associated past operability reviews and determined each event was reportable per 10 CFR 50.73(a)(2)(v) since each example resulted in a condition which affected both trains of a system described in the Final Safety Analysis Report that was needed to mitigate the consequences of an accident. Alternate safety systems accident mitigation is not permitted as a reason to not report the discovery of the conditions. The licensee also failed to report these failures to the NRC performance indicator database because of the failure to include the safety system functional failure in each respective licensee event report.

  This finding affects the Mitigating Systems Cornerstone and is greater than minor because the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in the regulations in order to perform its regulatory function. Consistent with the guidance in Section IV.A.3 and Supplement VII, Paragraph D.1 of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV noncited violation. The licensee planned to update the associated license event reports as described in Callaway Action Request 200904980. This finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure, through adequate training, that its staff understood the guidance documents pertaining to the 10 CFR 50.73 rule [H.2.(b)](Section 4OA3).

B. Licensee-Identified Violations

Two violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and their corrective action tracking numbers are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

AmerenUE operated the Callaway Plant near 100 percent for the entire inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

Readiness to Cope with External Flooding

a. Inspection Scope

On September 19, 2009, the inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Final Safety Analysis Report for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written.

These activities constitute completion of one external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

Partial Walkdown

a. Inspection Scope

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

- July 24, 2009, partial equipment walkdown of the refueling water storage tank system (BN) during emergent failure of level transmitter BNLT0930

- July 30, 2009, partial equipment walkdown of the spent fuel pool cooling system train B following restoration from maintenance

- August 25, 2009, partial equipment walkdown of the main steam and feedwater isolation valve system

- August 26, 2009, partial equipment walkdown of the demineralized water makeup system to the emergency diesel generators' jacket water expansion tanks

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 walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings 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:

- July 8, 2009, fire area RB, reactor building

- July 10, 2009, fire area A-9, room 1309, residual heat removal heat exchanger room, train B
- July 22, 2009, fire area A-23, rooms 1508, 1509, 1411 and 1412, main steam and feedwater isolation valve compartment
- August 24, 2009, fire area A-15, room 1331, turbine-driven auxiliary feedwater pump room
- September 6, 2009, fire area D-2, room 5201, emergency diesel generator room west
- September 6, 2009, fire area AB-1, room 4315, auxiliary boiler
- September 15, 2009, rooms U304 and U305, train B ultimate heat sink switchgear rooms

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 seven 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 walked down the three 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.

- July 9, 2009, essential service water cable vault train B
- July 22, 2009, essential service water cable vault train A
- August 10, 2009, containment spray pump room train B, following discovery of foreign material in floor drain system

These activities constitute completion of three flood protection measures inspection samples 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 XVI, "Corrective Action," associated with the licensee's failure to take prompt corrective actions to prevent continuous submergence of essential service water pump kerite insulated power cables. The continuously submerged environment for these cables existed because the two vaults containing these cables (MH-01N and MH-01S) had inadequate seals needed to protect the vaults from incoming surface water.

Description The inspectors reviewed the Callaway plant corrective action documents associated with NRC Information Notice 2002-12, "Submerged Safety Related Cables," and Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients." AmerenUE's response to the generic letter indicated that periodically (every 5 years) a visual inspection of safety related cable trays was performed to monitor for corrosion and to dewater the selected manholes. The inspected vaults containing essential service water pump cabling did not have sump pumps and were often found to be partially full of water.

The licensee's response to NRC Generic Letter 2007-01, on May 7, 2007, did report a limited amount of insulation resistance and polarization index testing as preventive maintenance in place to specifically test underground cables. Callaway Action Request 200201916, written on March 21, 2002, to evaluate NRC Information Notice 2002-12, confirmed that water was often being pumped out of the manholes during the periodic maintenance inspection but that the amount of water was not being documented. Callaway Action Request 200201916 stated that all medium voltage cables of concern were located more than 4 feet above the basemat of the vault and thus were not in a submerged condition. The Callaway action request noted that the seals at the top lid were the source of water intrusion and that the seal design was

inadequate as it was comprised of four seal strips with 45 degree mitered corners. The mitered corners had gaps up to 1 inch which prevented a good seal of the top cover. The corrective actions included an action for engineering to evaluate and approve a change to the design of the cover seal (Request for Resolution 22987A).

On July 9 and 22, 2009, the inspectors, along with Callaway plant engineers, inspected the two essential service water underground vaults. The north vault (train A) was found to have water covering the two safety related upper cable trays. Contrary to the Callaway Action Request 200201916 evaluation, the cable trays were about 2.5 feet and 3.5 feet from the basemat of the vault floor. The south vault water level was less and did not cover the upper safety related cable tray. During these 2009 inspections it was noted that the same lid design deficiency identified in Callaway Action Request 200201916 still existed. This led to the discovery that the Callaway action request actions from 2002 had not been completely performed. The only significant corrective action had been to increase the inspection frequency to once every three years. Callaway Action Request 200201916 referred to Callaway Action Request 200207811 which quoted an engineering department superintendent, "Given the recent reduction in staff (not filling open positions), and the disapproval of additional staff to support existing workload, this is something that engineering cannot support at this time." This was possibly the reason the corrective actions for Callaway Action Request 200201916 and Request for Resolution RFR22987A were never completed.

Consultation with the NRC Office of Nuclear Reactor Regulation and discussion with the licensee determined that these kerite insulated cables were not designed to be continuously submerged and could fail over time based on the operating experience examples mentioned in NRC Generic Letter 2007-01 and NRC Information Notice 2002-12. The inspectors verified that the latest megger tests for the essential service water pump cables (May 2008) were acceptable for demonstrating operability. The cables were not visible to the inspectors as the cable trays were mostly sealed with an epoxy. However, water had clearly entered the north vault cable trays as there was observed leakage out of all the trays once the vault had been dewatered. The licensee has subsequently taken measures to improve the seals and written Callaway Action Request/Request for Resolution 200905838 to further evaluate this issue.

Analysis. The performance deficiencies associated with this finding involved the licensee's failure to implement adequate corrective actions for an adverse condition. Specifically, the licensee failed to correct an inadequate and degraded seal design for underground cable vaults MH-01N and MH-01S. Additionally, the licensee failed to adequately demonstrate operability for the 4160 Vac essential service water pump cables through adequate testing and analysis for a continuously submerged condition. This finding is more than minor because it affected the Mitigating Systems Cornerstone attribute of design control for ensuring the availability, reliability, and capability of safety systems. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," this finding was determined be of very low safety significance because the degraded seals were a design or qualification deficiency confirmed not to result in loss of operability. The inspectors determined that the finding has no crosscutting aspect as the performance deficiencies were not reflective of current performance.

Enforcement Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure conditions adverse to quality are promptly identified and corrected. Contrary to the above, the licensee failed to implement adequate corrective actions for the identified adverse condition of inadequate seals and high water levels in the essential service water underground vaults. Specifically, the licensee failed to perform corrective actions prescribed in Callaway Action Request 200201916 to ensure that water cannot drain into these vaults and create a continuously submerged condition for the essential service water pump cables. Because this violation is of very low safety significance and has been entered into the licensee's corrective action program as Callaway Action Request 200908855, this violation is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000483/2009004-01, "Inadequate Corrective Actions for Essential Service Water Pump Cable Underground Electrical Vault Seals."

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On August 19, 2009, the inspectors observed a crew of licensed operators in the plant's simulator during an emergency preparedness ingestion pathway pre-exercise involving a steam generator tube rupture and fuel failures 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 preestablished 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.

.2 Written Examination and Operating Test Results (Biennial Review)

The licensed operator requalification program involves two training cycles that are conducted over a 2-year period. In the first cycle, the annual cycle, the operators are administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination.

a. Inspection Scope

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed both the operating tests and written examinations, and observed ongoing operating test activities.

The inspectors interviewed three licensed operators, consisting of one senior reactor operator and two reactor operators. The inspectors also interviewed six instructors to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written examinations and operating tests. The operating tests included two dynamic simulator scenarios that were administered during the current biennial requalification cycle. The inspectors reviewed medical records of six licensed operators for conformance to license conditions, the licensee's system for tracking qualifications, and records of license reactivation for one operator.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity and existing logs of simulator deficiencies.

The inspectors completed one inspection sample of the biennial licensed operator requalification program 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:

- July 23, 2009, review of maintenance rule evaluations and threshold for functional failure declarations associated with loop 2 over temperature delta temperature failure, Callaway Action Request 200903685
- July 23 and September 3, 2009, review of changes to maintenance rule evaluation criteria associated with component level evaluation changes, Callaway Action Request 200803108
- July 24, 2009, review of maintenance rule evaluations for refueling water storage tank level transmitters, Callaway Action Requests 200900160 and 200905815
- September 9, 2009, review of maintenance effectiveness of emergency diesel generator jacket water failures, Callaway Action Request 200812985

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 (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 four 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:

- September 4, 2009, risk associated with only one normal service water pump available

- September 9, 2009, elevated risk due to planned turbine-driven auxiliary feedwater pump maintenance

- September 16, 2009, elevated risk due to planned train A emergency diesel and essential service water outages

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 three 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:

- July 4, 2009, Callaway Action Request 200905373, normal feeder breaker to bus NB01 potential transformer failure
- July 23, 2009, Callaway Action Request 200905749, increased vibration on emergency exhaust system fan train A
- July 27, 2009, Callaway Action Request 200905821, identified leakage past main feedwater isolation valve control solenoid for steam generator D
- September 2, 2009, Callaway Action Request 200906686, radiation monitor GTRE 22 failure impact on containment purge isolation system
- September 8, 2009, Callaway Action Request 200907511, containment isolation valves for containment penetration 93
- September 15, 2009, Callaway Action Request 200908019, motor-driven auxiliary feedwater pump train A following discovery of improperly installed thrust bearing retaining ring

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'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 also 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 six operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following permanent modification to verify that the safety functions of important safety systems were not degraded:

- August 1, 2009, modification 86-0010, change from Barton to Rosemount for transmitter BNLT0930

The inspectors reviewed key affected parameters associated with energy needs, materials/replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the modification listed. The inspectors verified that modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; postmodification testing will maintain the plant in a safe configuration during testing by verifying that unintended system interactions will not occur; systems, structures and components' performance characteristics still meet the design basis; the appropriateness of modification design assumptions; and the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

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:

- July 21, 2009, postmaintenance test of the security diesel performed after radiator replacement, job 05509844
- August 6, 2009, postmaintenance test of the feeder breaker and room cooler associated with the train B containment spray pump, jobs 06527527 and 08500735
- August 19, 2009, postmaintenance test of battery charger NK24 following replacement of firing cards, volt potentiometer and equalizing timer, job 09005562
- August 27, 2009, postmaintenance test of valve EFHV039 after feeder breaker modification, job 07006899
- September 10, 2009, postmaintenance test of turbine-driven auxiliary feedwater pump following planned trip throttle valve maintenance, job 08502608.

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

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

The inspectors evaluated the activities against the technical specifications, the Final Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with 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 five 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.

- June 29, 2009, inservice test of the turbine-driven auxiliary feedwater pump, job 09504358
- July 13, 2009, inservice test of the train A containment spray pump, job 09505829
- July 15, 2009, routine review of the containment vent surveillance on July 14, 2009, permit RP11A-2009-G0051
- July 21, 2009, fast start of the train A emergency diesel generator, job 09506988
- July 28 2009, routine inspection of condensate storage tank floating cover, job 08509020
- August 26, 2009, local leak rate test on containment penetration 160, jobs 09506104, 09506105, 09506106 and 09506107
- September 11, 2009, reactor coolant system leakage surveillance per Procedure OSP-BB-0009, "RCS Inventory Balance"

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

These activities constitute completion of seven surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee personnel's performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable. The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed the following:

- Current 3-year rolling average collective exposure

- Site-specific trends in collective exposures, plant historical data, and source-term measurements
- Site-specific ALARA procedures
- Four work activities of highest exposure significance completed during the last outage
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Integration of ALARA requirements into work procedure and radiation work permit (or radiation exposure permit) documents
- Person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements
- Shielding requests and dose/benefit analyses
- Dose rate reduction activities in work planning
- Postjob (work activity) reviews
- Method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Exposures of individuals from selected work groups
- Source-term control strategy or justifications for not pursuing such exposure reduction initiatives
- Specific sources identified by the licensee for exposure reduction actions, priorities established for these actions, and results achieved since the last refueling cycle
- Resolution through the corrective action process of problems identified through postjob reviews and postoutage ALARA report critiques
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking

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

These activities constitute completion of 8 of the required 15 samples and 11 of the optional samples as defined in Inspection Procedure 71121.02-05.

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 second 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 Unplanned Scrams per 7000 Critical Hours (IE01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator for the period from the third quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI 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 and NRC integrated inspection reports for the period of July 1, 2008, through June 30, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned scrams per 7000 critical hours sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Unplanned Scrams with Complications (IE02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications performance indicator for the third quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI 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 and NRC integrated inspection reports for the period of July 1, 2008, through June 30, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned scrams with complications sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 Unplanned Power Changes per 7000 Critical Hours (IE03)

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Power Changes per 7000 Critical Hours performance indicator for the third quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports and NRC integrated inspection reports for the period July 1, 2008, through June 30, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned transients per 7000 critical hours sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.5 Reactor Coolant System Leakage (BI02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System Leakage performance indicator for the period from the third quarter 2008 through the second quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator logs, reactor coolant system leakage tracking data, issue reports, event reports, and NRC integrated inspection reports for the period from the third quarter 2008 through the second quarter 2009 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system leakage 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 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors provided additional focus for the following corrective action items:

- September 3, 2009, review of Westinghouse communication of possible fuel pellet over-enrichment due to inadequate passive gamma scanner software
- September 10, 2009, review of the licensee's plant equipment database and changes to motor-operated valve torque switch settings

These activities constitute completion of two in-depth problem identification and resolution samples as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 Review of Safety System Functional Failure on Submitted Licensee Event Reports

a. Inspection Scope

The inspectors reviewed past licensee event reports to determine if the licensee was correctly applying NUREG-1022, "Event Reporting Guidelines10 CFR 50.72 and 50.73."

b. Findings

Introduction. The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.73(a)(2)(v), "Licensee Event Report System," for a failure to report two examples of safety system functional failures in licensee event reports within 60 days after discovery of events requiring a report.

Discussion. The licensee failed to correctly report as safety system functional failures:

- March 26, 2008, discovery that operation of containment air coolers in fast speed, during a period of higher than normal containment pressure, could open the air coolers fast speed thermal overload device rendering all the coolers incapable of automatically restarting in slow speed

- May 21, 2008, discovery of a 6.6 cubic foot void of air in the common suction piping capable of affecting the function of both of the safety injection system pumps

Licensee event reports for each issue were reported (LER 2008001-00, ADAMS ML081490463 and LER 2008002-00, ADAMS ML090070032). See also NRC inspection findings NCV 05000483/2008003-01, "Failure to Ensure the Suitability of the Design of the Containment Air Cooler Control Circuitry," and NCV 05000483/2008004-02, "Failure to Submit a Licensee Event Report for a Condition Prohibited by the Plant's Technical Specifications."

A relevant feature of the containment coolers was that the fan motors were equipped with thermal overload protection to prevent motor damage from a mechanical overload. Separate overload devices provided for slow and fast speed operation were wired in series. On March 26, 2008, during at-power operation, containment pressure was elevated to about 1 psig as containment purge was not available for pressure reduction. All four containment cooler fans were operating in fast speed to reduce containment pressure when containment air cooler A fan shut down during a shift from fast to slow speed for a normal planned configuration change. The cooler's thermal overload contact had opened due to relatively high motor loading associated with the increased density of the air being moved through the fan. Originally the licensee had ruled out evaluating the design flaw impact during certain accidents because, even without any containment coolers, the peak containment pressure would not have been reached. However, for those certain accidents, there is sufficient time delay, prior to receiving a safety injection signal, to allow containment pressure to get significantly higher than the 1 psig

experienced on March 26, 2009. This was the basis for concluding that both trains of containment coolers were vulnerable to the design flaw. To correct the problem a design modification was applied to all four cooler control circuits.

For the void in the safety injection system, the licensee's reportability evaluation identified that it would be transported to either the suction of both safety injection pumps or both centrifugal charging pumps and was of sufficient volume that both trains' pumps would become gas bound and no longer be available to inject water into the reactor coolant system.

The NRC has provided licensee's reportability guidance within the Statement of Considerations, Explanation of the Licensee Event Report Rule (FRN 48 No. 144, July 26, 1983), and within NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73." Each of these documents has the following guidance:

> *If a component fails by an apparently random mechanism it may or may not be reportable if the functionally redundant component could fail by the same mechanism. Reporting is required if the failure constitutes a condition where there is a reasonable doubt that the functionally redundant train or channel would remain operational until it completed its safety function or is repaired.*
>
> *The 50.73(a)(2)(v) criteria cover an event or condition where structures, components, or trains of a safety system could have failed to perform their intended function because of: one or more personnel errors, including procedure violations; equipment failures; inadequate maintenance; or design, analysis, fabrication, equipment qualification, construction, or procedural deficiencies. The event must be reported regardless of whether or not an alternate safety system could have been used to perform the safety function.*

For each example, the inspectors reviewed the licensee's reportability evaluation and associated past operability reviews and determined each event was reportable per 10 CFR 50.73(a)(2)(v) since each example resulted in a condition which affected both trains of a system described in the Final Safety Analysis Report that was needed to mitigate the consequences of an accident. Alternate safety systems accident mitigation is not permitted as a reason to not report the discovery of the conditions. The licensee also failed to report these failures to the NRC performance indicator database because of the failure to include the safety system functional failure in each respective licensee event report.

Analysis. The performance deficiency associated with this finding involved two examples of the licensee's failure to correctly submit a required licensee event report within 60 days after discovery of an event requiring a report to the NRC. This finding affects the Mitigating Systems Cornerstone and is greater than minor because the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in the regulations in order to perform its regulatory function. Because this issue affected the NRC's ability to perform its regulatory function, it was evaluated with the traditional enforcement process. Consistent with the guidance in Section IV.A.3 and Supplement I, Paragraph D.4, of the NRC Enforcement Policy, this finding was

determined to be a Severity Level IV noncited violation. This finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure, through adequate training, that its staff understood the guidance documents pertaining to the 10CFR50.73 rule [H.2.(b)].

Enforcement. Title 10 CFR 50.73(a)(1) requires, in part, that licensees submit licensee event reports for any event of the type described in this paragraph within 60 days after the discovery of the event. Title 10 CFR 50.73(a)(2)(v) requires, in part, that the licensee report any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:

- Shut down the reactor and maintain it in a safe condition
- Remove residual heat
- Control the release of radioactive material, or
- Mitigate the consequences of and accident

Contrary to the above, the licensee failed to correctly identify two examples, documented in Licensee Event Reports 2008001-00 and 2008002-00, of design and condition inadequacies that could have prevented the fulfillment of the safety function of the containment coolers and the safety injection systems. This is a Severity Level IV noncited violation consistent with Supplement I, Paragraph D.4, of the NRC Enforcement Policy. Because this finding is of very low safety significance and has been entered into the corrective action program as Callaway Action Request 200904980, this violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000483/2009004-02, "Failure to Correctly Identify Safety System Functional Failures in a Licensee Event Report."

.2 (Closed) Licensee Event Report 05000483/2009003-00, Turbine-Driven Auxiliary Feedwater Pump Inoperable During Mode Change from 4 to 3

On November 3, 2008, while in Refueling Outage 16, the licensee replaced the remote servo for the turbine-driven auxiliary feedwater pump governor. During postmaintenance testing in Mode 4, an unexpected overspeed trip of the turbine occurred. Callaway operations staff inappropriately concluded that since the turbine was running using the auxiliary steam system at the time of the postmaintenance test, the cause of the overspeed of the turbine was likely due to a water slug within the system. Without determining an exact cause of the overspeed, the testing was re-performed satisfactorily. Successful performance of the postmaintenance test cleared a mode change restraint which allowed the plant to enter Mode 3 on November 4, 2008.

After entering Mode 3, the licensee prepared to test the turbine-driven auxiliary feedwater pump using the normal steam supply. While connecting a strip chart recorder, the licensee noted that the governor valve position indicator was erratic. Troubleshooting was performed and it was found that the servo control valve replaced during Refueling Outage 16 was faulty. At 4:50 p.m. on November 5, 2008, the licensee entered the applicable technical specification and initiated repairs to the turbine-driven auxiliary feedwater pump. Postmaintenance testing was performed and the licensee exited the technical specification at 12:15 p.m. on November 6, 2008.

During an NRC special inspection conducted in June 2009, inspectors questioned if the overspeed that occurred while in Mode 4 could have been related to the faulty remote servo valve discovered in Mode 3. The licensee reviewed the Refueling Outage 16 work history associated with the turbine-driven auxiliary feedwater pump governor and found that currents for the servo position sensor were lower than expected and the abnormal readings indicated that the remote servo valve was not operating properly. Based on this evidence, the licensee concluded that the faulty servo control valve discovered on November 5, 2008, was responsible for the overspeed of the turbine-driven auxiliary feedwater pump that occurred in Mode 4 and that the equipment was inoperable during the transition to Mode 3 that occurred on November 4, 2008.

Consequently, the event was determined to be reportable 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 since Callaway ascended to Mode 3 with the turbine-driven auxiliary feedwater pump inoperable and without being evaluated pursuant to Technical Specification Limiting Condition for Operation 3.0.4.b. The licensee submitted a licensee event report on August 31, 2009. 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. A violation of Limiting Condition for Operation 3.0.4. had previously been identified and documented as NCV 05000483/2009009-05, "Failure to Ensure Turbine-Driven Auxiliary Feedwater Pump is Operable Prior to Entry into Mode 3." No other performance deficiencies were identified. This licensee event report is closed.

.3 (Closed) Licensee Event Report 05000483/2009004-00, Failure to Comply with Technical Specification 3.8.1, Required Action A.1 for One Offsite Circuit Inoperable

On July 4, 2009, a lightning strike resulted in two Callaway Plant switchyard breakers opening on a protective relay command. During investigations to determine the impact of the lighting strike on plant equipment, an operations technician discovered an indication light on the main feeder breaker to safety related bus NB01 was extinguished. Since the indicating light did not have a label, the system's schematic diagram was reviewed. The operating crew concluded that the light was an indicator of control power to the breaker's charging springs. Since the charging springs were found to be in a charged condition, the operating crew assumed that the unlit indicator light was a loss of indication only and did not impact the safety related function of the feeder breaker.

After shift turnover, the oncoming operating crew reviewed the extinguished indication light on the main feeder breaker to safety related bus NB01. Upon visual indication, the shift manager discovered that the extinguished indicator light was not a control power indicator but an under-voltage indicator light. Based on control room indications, local indications, and consultation with engineering, the operating crew determined that the extinguished indicating light was due to a blown fuse that feeds the local meters and indicator lights. Since the unlit indicator light was thought to be a loss of indication only, the operating crew did not enter the applicable technical specification limiting condition for operation.

On July 6, 2009, maintenance crews investigated the extinguished indicator light and found that the fuses that supply the local indications and meters were intact. Additional troubleshooting revealed that a potential transformer within the breaker had failed. Failure of this potential transformer resulted in the inability of the feeder breaker to perform a synchronized bus transfer. Consequently, the equipment was unable to meet the requirement of Technical Specification Surveillance Requirement 3.8.16. Failure to meet the surveillance requirements resulted in the licensee inability to meet Limiting Condition for Operation 3.8.1.A, "AC Sources – Operating." Since the degraded condition was not immediately discovered, the licensee failed to comply with Technical Specification Limiting Condition for Operation 3.8.1, Required Action A.1 that required verification that the remaining offsite source was operable within 1 hour and every eight hours thereafter. 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 specification. The licensee submitted a licensee event report on August 31, 2009. The inspectors reviewed the licensee's submittal and determined that the report adequately documented the summary of the event including the potential safety consequences. A licensee-identified violation of Technical Specification 3.8.1, "AC Sources – Operating," was identified. The enforcement aspects of the violation are discussed in Section 4OA7 of this report. This licensee event report is closed.

4OA5 Other Activities

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 June 26, 2009, the inspector presented the occupational radiation President and Chief Nuclear Officer safety inspection results to Mr. A. Heflin, Senior Vice, and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

The inspectors briefed Mr. F. Diya, Vice President, Nuclear Operations, and other members of the licensee's staff on the results of the licensed operator requalification program inspection on September 3, 2009. The licensee representatives acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 21, 2009, the resident inspectors presented the inspection results to Mr. F. Diya, Vice President, Nuclear Operations, 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 violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as noncited violations.

- Technical Specification 3.8.1, "AC Sources – Operating," Action A.1, required that when one offsite source is inoperable, the licensee shall verify the remaining offsite source is operable within 1 hour and every eight hours thereafter. Contrary to the above, on July 4, 2009, the offsite power source to bus NB01 was inoperable and action was not taken within 1 hour to verify the other offsite source was operable. This finding was entered in the licensee's corrective action program as Callaway Action Request 200905373. This finding is greater than minor because it was associated with the Mitigating Systems Cornerstone attribute of human performance 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. (See Licensee Event Report 05000483/2009004-00 closure in Section 4OA3 of this report).

- 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, from October 20, 2008, to September 9, 2009, Procedure MTM-AL-QP002, Turbine-Driven Auxiliary Feedwater Pump, Revision 3, was inadequate for assembly of the turbine-driven auxiliary feedwater pump outboard thrust bearing. Specifically, step 6.15.5 of the procedure incorrectly directed the bearing retaining ring to be installed on the pump shaft instead of within the thrust bearing housing outboard end cover. This finding was entered in the licensee's corrective action program as Callaway Action Request 200907931. 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
G. Bradley, Manager, Operations
K. Bruckerhoff, Supervisor, Emergency Preparedness
J. Cortez, Training Supervisor
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, Plant Support
T. Hooper, Nuclear Test Engineer
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
A. Lord, Engineering Supervisor
S. Maglio, Assistant Manager, Regulatory Affairs
P. McKenna, Outages Manager
K. Mills, Manager, Quality Assurance
S. Petzel, Engineer, Regulatory Affairs
J. Pitts, Supervising Engineer
L. Sandbothe, Manager, Regulatory Affairs
R. Tiefenauer, Training Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000483/2009004-01	NCV	Inadequate Corrective Actions for Essential Service Water Pump Cable Underground Electrical Vault Seals (Section 1R06)
05000483/2009004-02	NCV	Failure to Correctly Identify Safety System Functional Failures in a Licensee Event Report (Section 4OA3)

Closed

05000483/2009003-00	LER	Turbine-Driven Auxiliary Feedwater Pump Inoperable During Mode Change from 4 to 3 (Section 4OA3)
05000483/2009004-00	LER	Failure to Comply with Technical Specification 3.8.1 Required Action A.1 for One Offsite Circuit Inoperable (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1RO4: Equipment Alignment

DRAWINGS

NUMBER	TITLE	REVISION / DATE
M-22AB02(Q)	Piping and Instrumentation Diagram Main Steam System	15
M-22BN01(Q)	Piping and Instrumentation Diagram Borated Refueling Water Storage System	25
M-22EC01(Q)	Piping and Instrumentation Diagram Fuel Pool Cooling and Clean-Up System	24
M-22EC02(Q)	Piping and Instrumentation Diagram Fuel Pool Cooling and Clean-Up System	31
M-22AN01(Q)	Piping and Instrumentation Diagram Demineralized Water Storage and Transfer System	37
M-22AD01(Q)	Piping and Instrumentation Diagram Condensate System	17
M-22AD02(Q)	Piping and Instrumentation Diagram Condensate System	31
M-22AE01(Q)	Piping and Instrumentation Diagram Feedwater System	46
M-22AE02(Q)	Piping and Instrumentation Diagram Feedwater System	28
M-628-00094	System Medium Operated Actuator for Quick Closing Valve Layout Diagram	0

Section 1RO5: Fire Protection

DOCUMENT TYPE

NUMBER	TITLE	REVISION / DATE
FPP-ZZ-00001	Auxiliary Building Prefire Strategies	22
FPP-ZZ-00002	Fuel Building Prefire Strategies	2

Section 1RO5: Fire Protection

FPP-ZZ-00003	Reactor Building Prefire Strategies	8
FPP-ZZ-00006	Turbine Building Prefire Strategies	9
FPP-ZZ-00100	Site Wide Fire Protection Inspection Procedure	8

Section 1RO6: Flood Protection Measures

CALCULATIONS

NUMBER	TITLE	REVISION / DATE
M-FL-02	Flooding of Auxiliary Building Rooms 1107-1114	0

CALLAWAY ACTION REQUESTS

200201916	200202811	200905838	200906132

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

NUMBER	TITLE	REVISION
E-0	Reactor Trip or Safety Injection	12
E-2	Faulted Steam Generator Isolation	9
EC Supp Guide	Emergency Coordinator Supplemental Guideline	7
EIP-ZZ-00101	Classification of Emergencies	44
EIP-ZZ-00101	Attachment 1, EAL Classification Matrix	0

MISCELLANEOUS

TITLE	DATE
NRC Licensed Operators List vs. Callaway List	
NRC Restriction Reports vs. Callaway Report	
RO/SRO Weekly Exams	
RO/SRO Weekly Exams	
Student Feedback Forms	
Last four quarters of proficiency watches for 2 SRO, and 3 RO, chosen at random	
Six randomly chosen licensed operator medical records	
2007-2009 Licensed Operators Continuing Training Sample Plan	
Actual training spreadsheet vs. Sample Plan	
Simulator Discrepancy Report (29 open items)	
Curriculum Review Committee Meeting Minutes 10/5/07-5/27/09	

Section 1R11: Licensed Operator Requalification Program

Training Advisory Group Meeting Minutes	September 19, 2007 – May 13, 2009
Callaway Training Executive Committee Meeting Minutes	November 29, 2007 – January 27, 2009
Callaway Action Request System (CARS for Operator Training)	
Callaway Action Request 200906848 (Time Critical JPM)	
Callaway Action Request 200906871 (Critical Task Invalidated)	
Callaway Action Request 200906872 (Pass with Remediation)	
Simulator Information Formal Tracking (SIFT) 2008001 and 20080101	
Dynamic Scenario Bank	

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

200803108	200812985	200900160	200903685	200905815

JOBS

W231106	06519689	07006899

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

Section 1R15: Operability Evaluations

PROCEDURES

NUMBER	TITLE	REVISION
APA-ZZ-00500, Appendix 1	Operability and Functionality Determinations	6
EDP-ZZ-01111	Vibration Predictive Maintenance Program	13
OTN-BN-00001	RWST Level Channel Malfunction	

CALLAWAY ACTION REQUESTS

200811746	200905373	200905749	200905821	200905924
200906686	200907511	200907931	200907948	200908019

Section 1R18: Plant Modifications

NUMBER	TITLE	REVISION / DATE
Engineering Change Notice 86-0010	Permit Use of Optional Rosemount Transmitter	0
Calculation ZZ-11	Qualification Group B Transmitter Error Calculation for Rosemount Replacements	1

Section 1R19: Postmaintenance Testing

PROCEDURES

NUMBER	TITLE	REVISION / DATE
OSP-AL-P0002	Turbine Driven Aux Feedwater Pump Inservice Test – Group B	59
OSP-EF-V001A	ESW Train A Valve Operability	35
MTM-AL-QP002	Turbine-Driven Auxiliary Feedwater Pump	3

CALLAWAY ACTION REQUESTS

200907931	200907947

JOBS

W231106	06519689	07006899

Section 1R22: Surveillance Testing

PROCEDURES

NUMBER	TITLE	REVISION / DATE
ETP-FC-00001	Calibration of Terry Turbine Governor Valve Actuator	4

Section 1R22: Surveillance Testing

HTP-ZZ-02012	Addenda A, Gaseous Radwaste Release Permit (Containment)	3
HTP-ZZ-02012	Gaseous Radwaste Release Permit (Containment)	43
RP11A-2009-G0051	Batch Airborne Radioactive Release Permit Closure Summary	July 15, 2009
OSP-AL-P0002	Turbine Driven Aux Feedwater Pump Inservice Test – Group B	58
OSP-AL-P0002	Turbine Driven Aux Feedwater Pump Inservice Test – Group B	59
OSP-AL-PV005	Turbine Drive Auxiliary Feedwater Pump and Check Valve Inservice Test - IPTE	3
OSP-BB-00009	Reactor Coolant System Inventory Balance	22
OSP-GT-L160B	Containment Mini Purge Valve Leak Rate Test	15
OSP-GT-L161B	Containment Shutdown and Mini Purge Valve Leak Rate Test	4
OSP-EN-P001B	Train B Containment Spray Pump Inservice Test	29
OSP-NE-0001B	Standby Diesel Generator B Periodic Tests	35
OSP-SA-0006B	Train B CSAS Slave Relay Test	20
OSP-SA-0007A	Train A AFAS Slave Relay Test	22
OSP-SA-02416	ESFAS Turbine Driven Auxiliary Feedwater Pump Response Time Test	13

CALLAWAY ACTION REQUESTS

200905595	200906686

JOBS

06113631	07506120	07506205	08006973	08510069
09002277	09504358	09504997	09506104	09506105
09506106	09506107	09509609		

Section 2OS2: ALARA Planning and Controls

PROCEDURES

NUMBER	TITLE	REVISION
APA-ZZ-01001	Callaway Plant ALARA Program	13
HDP-ZZ-01100	ALARA Planning and Review	9
HDP-ZZ-01200	Radiation Work Permits	11
HDP-ZZ-03000	Radiological Survey Program	32
HDP-ZZ-03000	Radiological Survey Program	31

Section 2OS2: ALARA Planning and Controls

APA-ZZ-00500	Corrective Action Program	46
HTP-ZZ-06009	Personnel Contamination Assessment and Decontamination	40

MISCELLANEOUS

TITLE	REVISION / DATE
Refuel 16 ALARA Outage Report,	October 10 – November 7, 2008
Callaway Plant Long Range Dose and Source Term Reduction Plan,	Revision 3, April 2009

CALLAWAY ACTION REQUESTS

200810982	200904890	200904663	200904897	200905073

RADIATION WORK PERMITS

07005259	Perform Reactor vessel Loop Nozzle Profile Measurements
07005350	Perform Visual Inspection of Reactor Vessel Loop Nozzles
08006895	Clean the bottom of the Reactor Vessel in the Incore Tunnel
890501HRA	Operations Activities in High Radiation Areas in All Areas of the RCA Including the Reactor Building

Section 4OA1: Performance Indicator Verification

PROCEDURES

NUMBER	TIITLE	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

MISCELLANEOUS

NUMBER	TITLE	REVISION
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	5

Section 4OA2: Identification and Resolution of Problems

PROCEDURES

NUMBER	TIITLE	REVISION
APA-ZZ-00304	Control of Callaway Equipment List	29
APA-ZZ-00330 Appendix A	Living Preventive Maintenance Program	1
APA-ZZ-01250	Operational Decision Making	3

Section 4OA2: Identification and Resolution of Problems

EDP-ZZ-01126, Appendix 3	Limitorque Stem Lubrication List	2
MTE-ZZ-QA006	Motor Operated Valve Analyst Guide	4

DRAWINGS

NUMBER	TIITLE	REVISION
E-23AL04A(Q)	Schematic Diagram Supply from Essential Service Water System	9
E-23AL04B(Q)	Schematic Diagram Supply from Essential Service Water System	8
E-23BN03(Q)	Schematic Diagram Refueling Water Storage Tank to RHR Pump MOV	13
E-23EF06A(Q)	Schematic Diagram ESW to Ultimate Heat Sink Isolation Valves	10
E-23EJ06A(Q)	Schematic Diagram Sump to No. 1 Residual Heat Removal Pump	12
E-23EJ09A(Q)	Schematic Diagram RHR to Cold and Hot Leg Valves	5
E-23EM02A(Q)	Schematic Diagram Boron Injection Inlet Isolation Valves	5
E-23EN02(Q)	Schematic Diagram Containment Recirculating Sump Isolation Valves	12
E-23EN03(Q)	Schematic Diagram Containment Spray Nozzles Isolation Valves	11

CALLAWAY ACTION REQUESTS

200002121	200905480	200906697	200907946	

JOBS

5109815	5111232	7509787	A152703B	A179443F
P620236	P622826	P623315	P629679	P646934
P647654	P651435	P654388	R152703A	R153666A
R179443A	W157964	W168047	W214323	W240288

Section 4OA3: Event Follow-up

CALLAWAY ACTION REQUESTS

200811520	200811621	200905373

Section 4OA3: Event Follow-up

MISCELLANEOUS

Root Cause Analysis for Callaway Action Request 200905373, Offsite Source to NB01 Rendered Inoperable

DRAWINGS

NUMBER	TITLE	REVISION / DATE
E-23NB01(Q)	Lower Medium Voltage System Class 1E 4.16KV Three Line Meter and Relay Diagram	6
E-23NB02(Q)	Lower Medium Voltage System Class 1E 4.16KV Three Line Meter and Relay Diagram	2
E-23NB03(Q)	Lower Medium Voltage System Class 1E 4.16KV Three Line Meter and Relay Diagram	14
E-23NB12(Q)	Schematic Diagram Class 1E Bus NB01 Feeder Breaker 152NB0112	6

JOBS

06113631 08008382

Section 4OA5: Other Activities

PROCEDURES

NUMBER	TITLE	REVISION
SDP-PI-VEHAC	Access/Control Vehicle	10

Section 4OA7: Licensee-Identified Violations

PROCEDURES

NUMBER	TITLE	REVISION
MTM-AL-QP002	Turbine-Driven Auxiliary Feedwater Pump	3
EDP-ZZ-01126	Lubrication Predictive Maintenance Program	8

CALLAWAY ACTION REQUESTS

200905373 200907931