



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
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ARLINGTON, TEXAS 76011-4005

April 23, 2008

Charles D. Naslund, Senior Vice  
President and Chief Nuclear Officer  
AmerenUE  
P.O. Box 620  
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SUBJECT: CALLAWAY PLANT - NRC INTEGRATED INSPECTION  
REPORT 05000483/2008002

Dear Mr. Naslund:

On March 24, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Callaway Plant. The enclosed report documents the inspection results, which were discussed on March 25, 2008, with you 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.

Based on the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Docket: 50-483  
License: NPF-30

Enclosure: Inspection Report 05000483/2008002  
w/Attachment: Supplemental Information

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SUNSI Review Completed: VGG ADAMS:  Yes  No Initials: VGG  
 Publicly Available  Non-Publicly Available  Sensitive  Non-Sensitive  
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RIV:SRI:DRP/B	C:DRS/OB	C:DRS/PSB	C:DRS/EB2	C:DRS/EB1
DDumbacher	RLantz	MShannon	LSmith	RBywater
/RA VGG for/	/RA/	/RA/	/RA/	/RA/
04/16/2008	04/14/2008	04/14/2008	04/14/2008	04/11/2008
C:DRP/B				
VGaddy				
/RA/				
04/23/2008				

**U. S. NUCLEAR REGULATORY COMMISSION**

REGION IV

Docket No: 50-483

License No: NPF-30

Report No: 05000483/2008002

Licensee: Union Electric Company

Facility: Callaway Plant

Location: Junction Highway CC and Highway O  
Fulton, MO

Dates: January 1 – March 24, 2008

Inspectors: D. Dumbacher, Senior Resident Inspector  
J. Groom, Resident Inspector  
P. Elkmann, Senior Emergency Preparedness Inspector

Approved by: V. Gaddy, Chief, Project Branch B

Enclosure

## SUMMARY OF FINDINGS

IR 05000483/2008002: 1/1-3/24/2008; Callaway Plant, routine integrated report.

This report covered a 3-month period of inspection by resident and region based inspectors. 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 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 and Self-Revealing Findings**

None.

**B. Licensee Identified Violations**

None.

## REPORT DETAILS

### Summary of Plant Status

AmerenUE operated the Callaway Plant at near 100 percent until March 22, 2008, when a downpower to 62 percent was required to repair a main feedwater pump control-oil valve. The plant was restored to full power on March 23, 2008.

### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection (71111.01)

##### Winter Seasonal Readiness Preparations

##### a. Inspection Scope

The inspectors performed a review of the licensee's preparations for winter weather for selected systems, including conditions that could result from low temperatures. The inspectors reviewed the licensee's procedures affecting these areas. Examples of aspects considered in the inspectors' review included:

- cold weather protection features, such as heat tracing;
- space heaters and weatherized enclosures; and
- instrument controller and alarm calibration programs.

During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Final Safety Analysis Report (FSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant system:

- February 20, 2008, Condensate storage tank cold weather preparations.

Documents reviewed by the inspectors included:

- Procedure OTN-QJ-00003, Condensate storage tank freeze protection control panel, Addendum 2, Revision 0.

This inspection constitutes one seasonal adverse weather sample as defined in Inspection Procedure 71111.01.

##### b. Findings

No findings of significance were identified.

## 1R04 Equipment Alignment (71111.04)

### Quarterly Partial System Walkdowns

#### a. Inspection Scope

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

- January 15, 2008, Safety injection and charging systems (EM and BG) common suction header;
- February 19, 2008, Containment spray system Train A while Train B was out of service for planned modifications; and
- March 18, 2008, Emergency diesel generator system Train A while Train B was out of service for emergent fuel oil leak repairs.

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 discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, FSAR, Technical Specification requirements, 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 components and support equipment were aligned correctly and were 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. Documents reviewed are listed in the attachment.

These activities constituted three partial system walkdown samples as defined by Inspection Procedure 71111.04.

#### b. Findings

No findings of significance were identified.

## 1R05 Fire Protection (71111.05)

### Routine Resident Inspector Tours (71111.05Q)

#### a. Inspection Scope

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



- January 25, 2008, Auxiliary feedwater pump valve compartment Rooms 1304, 1324, and 1337, Area A-29;
- February 1, 2008, Reactor trip switchgear Room 1403, Area A-27;
- March 5, 2008, Battery Rooms 3403, 3404, 3405, and 3410 (south), Area C-15;
- March 5, 2008, Class 1E air conditioning equipment Room 3415, Area C-13;
- March 7, 2008, Emergency Diesel Generator B Room 5201, Area D-2; and
- March 18, 2008, Main control room including behind panel Rooms 3601 and 3603-3606, Area C-27.

The inspectors reviewed areas to assess if the licensee 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 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 impact equipment which 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.

These activities constituted six quarterly fire protection inspection samples as defined by Inspection Procedure 71111.05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk-significant plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the FSAR, engineering calculations, and abnormal operating procedures for licensee commitments. The inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water. The inspectors also reviewed the licensee's corrective actions for previously identified flood-related items. The inspectors performed a walkdown of the following plant area to assess the adequacy of any watertight doors

and verify drains and sumps were clear of debris and operable, and that the licensee complied with its flooding related commitments:

- January 24, 2008, Control Room HVAC poly vinyl alcohol drain covers (RFRs 9906A and 9906B).

Documents reviewed are listed in the attachment.

This inspection constitutes one internal flooding sample as defined in Inspection Procedure 71111.06.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On March 5, 2008, the inspectors observed a crew of licensed operators perform a cooldown and depressurization following a loss of coolant accident 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 crew in the following areas:

- licensed operator performance;
- crew clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate Technical Specification actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

This inspection constitutes 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)

Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- February 4, 2008, Train B service water pump discharge valve failed to open, Callaway Action Request (CAR) 200800829; and
- March 5, 2008, Auxiliary building emergency exhaust system Damper GFD0025 found inoperable, CAR 200800878.

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of risk-important 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) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability time;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or reclassification; and
- verifying appropriate performance criteria for structures, systems, and components/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. The inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Documents reviewed are listed in the attachment.

This inspection constitutes two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee'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:

- January 14, 2008, Elevated risk due to a planned outage on offsite power line entering the switchyard;
- January 30, 2008, Elevated risk due to Job P693757.500 on Valve EJV0156 affecting the Train A charging, safety injection, and residual heat removal pumps;
- February 1, 2008, Elevated risk due to Job 0800755 emergent failure associated with the Train A reactor trip breaker;
- February 12, 2008, Elevated risk due to emergent work on the turbine-driven auxiliary feedwater system (Jobs 07514088 and 06522794);
- February 29, 2008, Elevated risk due to emergent work to repair jacket water leaks on the Train B emergency diesel generator (Job 08001231); and
- March 24, 2008, Elevated risk due to emergent work to replace the Train A emergency diesel generator, cylinder number seven fuel oil return nipple.

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. 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 Technical Specification requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Documents reviewed by the inspectors included:

- Procedure EDP-ZZ-01129, Callaway Plant Risk Assessment, Revision 14

These activities constituted six samples as defined by Inspection Procedure 71111.13.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- January 17, 2008, CAR 200800367, Breaker NK5423 following the discovery of elevated temperatures on the breaker feeding 120 volt instrument Bus 114;
- January 23, 2008, CAR 200800461, Train A and B containment recirculation sumps following discovery of a non-conforming strainer support plate construction;
- February 15, 2008, CARs 200801115 and 200608319, Turbine-driven auxiliary feedwater pump lube oil cooler missing support;
- February 20, 2008, CAR 200801270, Train B emergency diesel generator jacket water leak;
- March 6, 2008, CAR 200801664, Turbine-driven auxiliary feedwater pump exhaust line missile protection; and
- March 18, 2008, CAR 200802019, Train B emergency diesel generator fuel oil leak.

The inspectors selected 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 FSAR 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 sample of corrective action documents to verify that the licensee was identifying and correcting deficiencies associated with operability evaluations.

Documents reviewed are listed in the attachment.

This inspection constitutes six samples as defined in Inspection Procedure 71111.15.

b. Findings

Containment Recirculation Sump Operability

Introduction. An unresolved item was identified when several operability determinations, from January 22 through March 26, 2008, associated with the already installed containment recirculation sump strainer modification, were required to ensure new design discoveries did not create unacceptable reductions in margin to net positive suction head requirements for essential core cooling components.

Description. 10 CFR Part 50, Appendix B, Criterion III, requires, in part, that measures be established to assure that applicable regulatory requirements and design basis be correctly translated into specifications, drawings, procedures and instructions. Technical Specifications 3.5.2 and 3.6.6 require that residual heat removal and containment spray system components remain operable. Contrary to this, measures were not adequate to assure the design basis calculation of strainer head loss for the modification to the containment recirculation sump was correct. Several operability determination reviews failed to uncover additional design issues that were later discovered. AmerenUE identified that associated vendor calculation, TDI-6002-05, for clean strainer head loss omitted the head loss component associated with the orifices located in the strainer support plate. The size of the orifice beneath each strainer was not large enough to prevent head loss in excess of the net positive suction head required per the design conditions defined in the purchase specification supplied to the strainer vendor. The additional head loss due to the calculation error was 2.28 feet. This resulted in net positive suction head required being less than net positive suction head available. AmerenUE performed three separate operability determination reviews to demonstrate that the head loss margin could be recovered. The initial operability determination, on January 22, 2008, addressed the smaller support plate orifice holes by using a separate vendor's flow analysis of the residual heat removal and containment spray piping systems to demonstrate lower flow and head losses than described in the FSAR. This operability determination determined the limiting case flow path was the hot leg recirculation flow path. Another operability review, on March 12, 2008, addressed a nonconservative temperature correction through the orifices. Subsequent to this, the licensee informed the NRC that additional nonconservative inputs were used in the January 22, 2008, flow analysis of the residual heat removal system. Additional analyses were performed to regain margin. This resulted in the limiting case flow path changing from hot leg recirculation to cold leg recirculation. At the completion of the inspection period, there were still unresolved questions about the assumptions and results associated with the software used for regaining net positive suction head margin. Initial reviews have determined that adequate margin still exists. However, these require additional inspection and, when completed, the inspection results will require significance determination. This issue is considered unresolved pending additional NRC review of AmerenUE operability determination calculations, Unresolved Item 05000483/2008002-01, "Containment Recirculation Sump Operability."

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the design adequacy of the listed modifications. This included verifying that the modification preparation did not impair the following: (a) in-plant

emergency/abnormal operating procedure actions; (b) key safety functions; and (c) operator response to loss of key safety functions.

The inspectors verified that postmodification testing maintained the plant in a safe configuration during testing and that the postmodification testing established operability by: (a) verifying that unintended system interactions did not occur; (b) verifying that performance characteristics, which could have been affected by the modification, met the design bases; (c) validating the appropriateness of modification design assumptions; and (d) demonstrating that the modification test acceptance criteria had been met.

- February 19, 2008, Modification MP-05-1001, Containment spray system recirculation piping modification; and
- March 18, 2008, Modification MP-08-0006, Over temperature delta temperature circuit card/setpoint change.

Documents reviewed are listed in the attachment.

These activities constituted two samples as defined by Inspection Procedure 71111.18.

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:

- January 24, 2008, Jobs 07010181.905 and 08000198, Postmaintenance testing of Train A diesel-driven fire pump;
- February 4, 2008, Job 08000755.910, Postmaintenance testing of the Train A reactor trip breaker;
- February 6, 2008, Job 08000838, Postmaintenance testing of isolation damper for the main steam enclosure ventilation system;
- February 13, 2008, Job 06529282.920, In-plant review of testing on the turbine-driven auxiliary feedwater pump and associated discharge Valve ALHV0010; and
- March 19, 2008, Job 08001116, Postmaintenance test of a revised over temperature delta temperature setpoint established in Maintenance Procedure 08-0006.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities to verify (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; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against Technical Specifications, the FSAR, 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.

Documents reviewed are listed in the attachment.

This inspection constitutes five samples as defined in Inspection Procedure 71111.19.

b. Findings

No findings of significance were identified

1R22 Surveillance Testing (71111.22)

Routine Surveillance Testing, Inservice Testing, Reactor Coolant System Leak Detection Inspection Surveillance, and Containment Isolation Valve Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and Technical Specification requirements:

- January 7, 2008, Inservice Test Surveillance 07512630, Train A motor-driven auxiliary feedwater pump;
- January 9, 2008, Routine Surveillance 07514884, Train A emergency diesel generator;
- February 13, 2008, Inservice Test Surveillance 07514181, Turbine-driven auxiliary feedwater pump;
- February 27, 2008, Inservice Test Surveillance 07513685, Train A containment spray pump;
- March 7, 2008, Inservice Test Surveillance 08502024, Train A component cooling water pumps;
- March 7, 2008, Inservice Test Surveillance 08502026, Train A essential service water pump; and



- March 24, 2008, Reactor coolant system leak detection surveillance, Procedure OSP-BB-00009.

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; the calibration frequency was in accordance with Technical Specifications, the FSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met Technical Specification requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; equipment was returned to a position or status required to support the performance of the safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the corrective action program.

Documents reviewed are listed in the attachment.

The inspectors completed one routine, five inservice test, and one reactor coolant system leakage detection surveillances.

b. Findings

No findings of significance were identified.

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

.1 Review of Revision 31 to the Radiological Emergency Response Plan and 43 to Emergency Plan Implementing Procedure EIP-ZZ-00101, "Classification of Emergencies"

a. Inspection Scope

The inspector performed an in-office review of Revision 31 to the Callaway Plant Radiological Emergency Response Plan, submitted October 2, 2007, and Revision 43 to Emergency Plan Implementing Procedure EIP-ZZ-00101, "Classification of Emergencies," issued September 21, 2007. These revisions changed the reactor vessel level used to determine the status of fission product barriers integrity, made changes to the emergency planning zone boundary in the city of Fulton, Missouri as approved by Callaway County, Missouri, the State of Missouri and Federal Emergency Management Agency, Region VII, updated the effective range of offsite alert and notification system warning sirens, and changed the description of immediate first-aid capabilities inside the licensee's protected area.

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to the criteria of Nuclear Energy Institute Report 99-01, "Methodology for Development of Emergency Action Levels," Revision 2, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q). These reviews were not documented in a safety evaluation report and did not constitute approval of licensee changes, therefore these revisions are subject to future inspection.

The inspector completed two samples during the inspection.

b. Findings

No findings of significance were identified.

.2 Review of Revision 32 to the Radiological Emergency Response Plan

a. Inspection Scope

The inspector performed an in-office review of Revision 32 to the Callaway Plant Radiological Emergency Response Plan, submitted January 30, 2008. This revision updated the description of meteorological instruments in use by the licensee, updated station organizational titles, and made minor administrative corrections.

The revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a Safety Evaluation Report and did not constitute approval of licensee changes; therefore, these revisions are subject to future inspection.

The inspector completed one sample during the inspection.

b. Findings

No findings of significance were identified.

1EP7 Force-on-Force Exercise Evaluation (71114.07)

a. Inspection Scope

The inspectors observed licensee performance during the site emergency preparedness drill in the Technical Support Center. This drill was in conjunction with an inspection scheduled and observed by the NRC's Office of Nuclear Security and Incident Response and documented in Inspection Report 05000483/2008201. The inspectors observed communications, event classification, and event notification activities by the simulated shift manager. The inspectors reviewed the emergency preparedness-related corrective actions from a previous inspection conducted by the NRC's Office of Nuclear Security and Incident Response to determine whether they had been completed and adequately addressed the cause of the previously-identified weakness. The inspectors also observed portions of the post-drill critique to determine whether their observations were

also identified by the licensee's evaluators. The inspectors verified that minor issues identified during this inspection were entered into the licensee's corrective action program.

This inspection constitutes one sample as defined by Inspection Procedure 71114.07.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator for the period from January 1 through December 31, 2007. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Revision 5 of the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, equipment out of service log, event reports, and NRC integrated inspection reports for the period to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors 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.

This inspection constitutes one MSPI emergency AC power system sample as defined by Inspection Procedure 71151.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Cooling Water Systems performance indicator for the period from January 1 through December 31, 2007, to determine the accuracy of the performance indicator data reported during those periods. Performance indicator definitions and guidance contained in Revision 5 of NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The inspectors reviewed the licensee's operator narrative logs, equipment out of service log, MSPI derivation reports, event reports, and NRC integrated inspection reports for the period of January 1 through December 31, 2007, to validate the accuracy of the

submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified.

This inspection constitutes one MSPI cooling water system sample as defined by Inspection Procedure 71151.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity performance indicator for the period from January 1 through December 31, 2007, to determine the accuracy of the performance indicator data reported during those periods. Performance indicator definitions and guidance contained in Revision 5 of the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The inspectors reviewed the licensee's reactor coolant system chemistry samples, Technical Specification requirements, issue reports, event reports, and NRC integrated inspection reports for the period off January 1 through December 31, 2007, 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.

This inspection constitutes one reactor coolant system specific activity sample as defined by Inspection Procedure 71151.

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 Items Entered into the Corrective Action Program

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. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrence reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's corrective action program as a result 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. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed, by procedure, as part of the inspectors' 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 Followup Inspection

a. Inspection Scope

The inspectors selected the below listed issues for a more in-depth review. The inspectors considered the following during the review of AmerenUE's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- February 5, 2008, CAR 200800857, Auxiliary building emergency exhaust system Damper GFD0025 found inoperable during inspection on

Damper GFD0024. The inspectors identified that extent of condition inspections initiated by CARs 200601898 and 200601924 in March 2006 were not timely but did not rise to the level of a more than minor violation as no loss of system function occurred.

- February 26, 2008, CAR 200801400, Application of Technical Specification Surveillance Requirement 3.0.2 for initial inservice comprehensive pump testing. The new testing became a requirement when the licensee adopted the ASME Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition with 2003 Addenda, in December 2005. The inspectors reviewed the licensee's application of a 25 percent grace period beyond the required 2-year frequency for the containment spray system pumps. The testing required a modification in the form of an additional recirculation line for the pumps to meet the new ASME pump flow test requirement. The NRC determined that, although the licensee's identification of the requirement was not timely, no violation of regulatory requirements occurred.
- March 17, 2008, CAR 200802019, Historical fuel oil leaks on Train B emergency diesel return lines. The inspectors reviewed five repeat fuel oil leaks on the Train B emergency diesel generator. Each occurrence appeared to be due to cyclical fatigue failure at the Number 7 cylinder fuel oil return line. Each time prior to the March 2008 failure resulted in a repair without a cause evaluation to determine the cause of the fatigue failures. The NRC determined this issue to be a minor violation because no loss of emergency diesel function occurred. This issue has been addressed by the AmerenUE corrective action program.

The above constitutes completion of three in-depth problem identification and resolution samples.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

Exit Meeting Summary

On January 2, 2008, the inspector conducted a telephonic exit interview to present the results of the in-office inspection of licensee changes to the emergency plan and implementing procedures to Mr. K. Bruckerhoff, Supervisor, Emergency Preparedness, and other members of his staff, who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On February 7, 2008, the inspector conducted a telephonic exit meeting to present the results of the in-office inspection of licensee changes to their emergency plan to Mr. K. Bruckerhoff, Supervisor, Emergency Preparedness, who acknowledged the findings. The inspector confirmed that proprietary, sensitive, or personal information examined during the inspection had been returned to the identified custodian.

On March 25, 2008, the inspectors presented the inspection results to Mr. C. Naslund, Senior Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. No propriety information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

B. Barton, Training Manager  
K. Bruckerhoff, Supervisor, Emergency Preparedness  
F. Diya, Plant Director  
T. Elwood, Supervising Engineer, Licensing  
L. Graessle, Manager, Regulatory Affairs  
A. Heflin, Vice President, Nuclear  
T. Herrmann, Vice President, Engineering  
J. Hiller, Engineer, Regulatory Affairs  
L. Kanuckel, Manager, Quality Assurance  
D. Lantz, Superintendent of Operations Training  
S. Maglio, Assistant Manager, Regulatory Affairs  
R. Myatt, Supervisor, Engineering  
K. Mills, Manager, Engineering  
D. Neterer, Manager, Nuclear Operations  
S. Petzel, Engineer, Regulatory Affairs  
J. Pitts, Component Engineer

### LIST OF ITEMS OPENED

#### Opened

05000483/2008002-01      URI      Containment Recirculation Sump Operability

### LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

#### **1R04: Equipment Alignment**

#### Procedures

OTN-EN-00001, Containment Spray System, Revision 13

#### Drawings

M-23EJ01(Q), Piping Isometric Residual Heat Removal System Auxiliary Building – Train A, Revision 19



M-23EM01(Q), Piping Isometric High Pressure Coolant Injection System – Auxiliary Building, Revision 10

M-23BG02(Q), Piping Isometric CVCS-Max Charging Flow Train A and B – Auxiliary Building, Revision 12

M-23EJ06(Q), Small Piping Isometric Residual Heat Removal System Auxiliary Building – Details, Revision 4

#### Miscellaneous

C-4152-00-4, Allowable Volume to be Vented from EJV0199 – Callaway, Revision 0  
CAR 200401937

#### **1R06: Flooding**

##### Drawings

E-018-00012, Motor Control Center Layout, Revision 23  
E-018-00013, Motor Control Center Layout, Revision 30  
M-FL-07, Flooding of Aux Bldg Rooms Elevation 2047'6", Revision 0  
M-FL-07, Flooding of Aux Bldg Rooms Elevation 2047'6", Revision 1

##### Requests for Resolution

RFR 9906A, Evaluate Use of PVA Film, May 20, 1992  
RFR 9906B, Evaluate Use of PVA in Control Room AC Unit Room, May 13, 1993

#### **1R12: Maintenance Effectiveness**

##### Callaway Action Requests

200710448    200800829    200800878    200801115

##### Procedures

EDP-ZZ-01128, Maintenance Rule Program, Revision 8

#### **1R15: Operability Evaluations**

##### Callaway Action Requests

200801115    200801270

##### Drawings

Calculation TDI-6002-05/TDI-6003-05, Clean Head Loss – Wolf Creek/Callaway, Revision 2

C-1016-00003, Wolf Creek/Callaway Sure-Flow Strainer Sections, Revision 5

C-1016-00012, Wolf Creek/Callaway Sure-Flow Strainer A-Sump Bottom Platform Assembly – Plan and Views, Revision 7

C-1016-00014, Wolf Creek/Callaway Sure-Flow Strainer A-Sump Bottom Platform Top Covers Assembly and Details, Revision 8

C-1016-00018, Wolf Creek/Callaway Sure-Flow Strainer B-Sump Bottom Platform Assembly – Plan and Views, Revision 7

C-1016-00020, Wolf Creek/Callaway Sure-Flow Strainer B-Sump Bottom Platform Top Covers Assembly and Details, Revision 8

E-20-00009, NK 54, Revision 10

E-21NK02(Q), Class 1E 125V DC System Meter and Relay Diagram, Revision 8

J-1065-00001, Union Electric Company, Callaway Plant MSFIS Index and Symbols, Revision 2

J-1065-00002, Union Electric Company, Callaway Plant Assembly – Group I and IV Component Locations, Revision 4

J-1065-00008, Union Electric Company, Callaway Plant MSFIS – Group IV Schematic MSIV #1 and MSIV #2, Revision 2

J-1065-00014, Union Electric Company, Callaway Plant MSFIS Cabinet – Schematic Power Distribution, Revision 5

J-1065-00015, Union Electric Company, Callaway Plant MSFIS Cabinet – Logic Diagram, Revision 2

J-1065-00060, Union Electric Company, Callaway Plant MSFIS Cabinet – Logic Diagram Valve Control, Revision 1

M-22AB02(Q), Piping and Instrumentation Diagram Main Steam System, Revision 15

M-22AE02(Q), Piping and Instrumentation Diagram Feedwater System, Revision 28

M-22BB01(Q), Piping and Instrumentation Diagram Reactor Coolant System, Revision 30

M-22BG03(Q), Piping and Instrumentation Diagram Chemical and Volume Control System, Revision 52

M-22EJ01(Q), Piping and Instrumentation Diagram Residual Heat Removal System, Revision 56

M-22EM01(Q), Piping and Instrumentation Diagram High Pressure Coolant Injection System, Revision 33

## **1R18: Plant Modifications**

### Procedures

ITG-ZZ-WNAL2, Generic-Card; Westinghouse 7300 Mdl Nal Style 2837A13G02  
OSI-BB-0T421, LOOP-TEMP; LOOP 2 DELTA T/T AVG

### Drawings

M-22EN01, Piping and Instrumentation Diagram Containment Spray System, Revision 9

M-23EN02(Q), Piping Isometric Containment Spray System Auxiliary Building - Train B  
Revision 12

### Miscellaneous

Letter ULNRC-05090, Callaway Plant Union Electric Company, Docket Number 50-483  
Extension of Current 10-Year Inservice Testing Interval for Callaway Plant, November 16, 2004

Job 08001116, Modify OTDT Rod Stop/Turbine Runback Setpoint per Modification 08-0006

## **1R19: Postmaintenance Testing**

### Procedures

OSP-KC-00001, Fire Pump Starting and Fire Water Storage Tank Inspection, Revision 16  
OSP-KC-03004, Fire Pump Performance Test, Revision 4

### Drawings

E-23AC38(Q), Schematic Diagram, Main Turbine System with NSSS Interface, Revision 3

E-23SB104A(Q), Schematic Diagram, Reactor Trip Switchgear, Train A, Revision 1

Westinghouse Nuclear Energy Systems Drawing 9137D61, LVME DS Reactor Trip Switchgear,  
Revision 1

### Miscellaneous

Callaway Control Room Log, Dated February 2, 2008

## **1R22: Surveillance Testing**

### Procedures

OSP-AL-P001A, Motor-driven Auxiliary Feedwater Pump A Inservice Test – Group A,  
Revision 47

OSP-EF-P001A, Essential Service Water Train A Inservice Comprehensive Test, Revision 54

OSP-EG-PV01A, Component Cooling Water Train A Pump and Valve IST Comprehensive Test, Revision 0,

OSP-EN-P001A, Containment Spray A Inservice Test – Group B, Revision 27

OSP-NE-0001A, Standby Diesel Generator A Periodic Tests, Revision 29

Miscellaneous

Letter dated October 4, 2006 from Chief of NRC Technical Specification Branch to the Technical Specification Task Force

AmerenUE Simple Surveillance Report SP06-024, dated June 22, 2006

Quality Assurance Audit of Testing AP07-002, dated April 5, 2007

Letter from Regulatory Affairs to C. D. Naslund recommending approval of License Amendment OL-1284

Job 07512630/500, Motor-driven Auxiliary Feed Pump A surveillance, January 7, 2008