



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION IV  
1600 E. LAMAR BLVD.  
ARLINGTON, TX 76011-4511

April 20, 2016

Shane M. Marik, Vice President  
and Chief Nuclear Officer  
Omaha Public Power District  
Fort Calhoun Station  
P.O. Box 550  
Fort Calhoun, NE 68023-0550

**SUBJECT: FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT  
NUMBER 05000285/2016001**

Dear Mr. Marik:

On March 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. On April 12, 2016, the NRC inspectors discussed the results of this inspection with Mr. Todd Tierney, Plant Manager, and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. Further, inspectors documented a licensee-identified violation, which was determined to be of very low safety significance, in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest these violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at Fort Calhoun Station.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's

S. Marik

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Sincerely,

*/RA/*

Jeffrey Josey, Acting Chief  
Project Branch D  
Division of Reactor Projects

Docket No. 50-285  
License No. DPR-40

Enclosure:  
NRC Inspection Report 05000285/2016001  
w/ Attachment: Supplemental Information

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S. Marik

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**/RA/**

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Letter to Shane M. Marik from Jeffrey Josey dated April 20, 2016

SUBJECT: FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT  
NUMBER 05000285/2016001

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000285

License: DPR-40

Report: 05000285/2016001

Licensee: Omaha Public Power District

Facility: Fort Calhoun Station

Location: 9610 Power Lane  
Blair, NE 68008

Dates: January 1 through March 31, 2016

Inspectors: S. Schneider, Senior Resident Inspector  
B. Cummings, Resident Inspector  
S. Janicki, Acting Resident Inspector  
S. Alferink, Reactor Inspector  
I. Anchondo, Reactor Inspector  
P. Elkmann, Senior Emergency Preparedness Inspector  
G. George, Senior Reactor Inspector  
R. Hagar, Senior Project Engineer  
J. Melfi, Project Engineer  
C. Roque-Cruz, Project Manager Japanese Lessons Learned Directorate

Approved By: Jeffrey Josey  
Acting Chief, Project Branch D  
Division of Reactor Projects

## SUMMARY

IR 05000285/2016001; 01/01/2016 – 03/31/2016; Fort Calhoun Station; Follow-up of Events and Notices of Enforcement Discretion

The inspection activities described in this report were performed between January 1 and March 31, 2016, by the resident inspectors at Fort Calhoun Station and inspectors from the NRC's Region IV office and other NRC offices. One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements and was determined to be a Severity Level IV violation under the traditional enforcement process. Additionally, NRC inspectors documented one licensee-identified violation of very low safety significance. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

### Cornerstone: Mitigating Systems

- Green. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59, "Changes, Tests, and Experiments," for the failure to recognize that a change to the facility as described in the Updated Safety Analysis Report would require prior NRC review and approval. Specifically, the 10 CFR 50.59 evaluation revised a site procedure, without NRC approval, to substitute automatic flow control of shutdown cooling flow and temperature with manual control using the low pressure safety injection loop injection valves. The licensee's corrective actions included revising the affected procedure to reflect the original automatic flow control. The licensee entered this issue in the corrective action program as Condition Report 2013-15342.

The licensee's failure to implement the requirements of 10 CFR 50.59 and adequately evaluate changes to determine if prior NRC approval is required was a performance deficiency. Because this violation had the potential to impact the NRC's ability to perform its regulatory function, the inspectors evaluated the violation using traditional enforcement. In accordance with Section 2.1.3.E.6 of the NRC Enforcement Manual, the team evaluated this finding using the significance determination process to assess its significance. The inspectors performed an initial screening of the finding in accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 1, 2012. Using Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," dated July 1, 2012, the finding was determined to have very low safety significance (Green) because it: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's Maintenance Rule program. Therefore, in accordance with Section 6.1.d.2 of the NRC Enforcement Policy, the inspectors characterized this performance deficiency as a

Severity Level IV violation. The inspectors determined that a cross-cutting aspect was not applicable because the issue involving the failure to perform an adequate 10 CFR 50.59 evaluation was strictly associated with a traditional enforcement violation. (Section 4OA3)

### **Licensee-Identified Violations**

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

## PLANT STATUS

The unit began and ended the inspection period at approximately 100 percent power.

## REPORT DETAILS

### 1. REACTOR SAFETY

#### Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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

##### .1 Readiness for Impending Adverse Weather Conditions

###### a. Inspection Scope

On January 19, 2015, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features, the licensee's procedures to respond to high winds, freezing conditions, and snow accumulation, and the licensee's implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

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

###### b. Findings

No findings were identified.

##### .2 Readiness to Cope with External Flooding

###### a. Inspection Scope

On February 26, 2016, the inspectors completed an inspection of the station's readiness to cope with external flooding. After reviewing the licensee's flooding analysis, the inspectors chose two plant areas that were susceptible to flooding:

- Intake structure
- Auxiliary building

The inspectors reviewed plant design features and licensee procedures for coping with flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether credited operator actions could be successfully accomplished.

These activities constituted one sample of readiness to cope with external flooding, as defined in Inspection Procedure 71111.01.

###### b. Findings

No findings were identified.



## **1R04 Equipment Alignment (71111.04)**

### Partial Walkdown

#### a. Inspection Scope

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

- January 25, 2016, motor-driven auxiliary feedwater pump lineup during diesel-driven auxiliary feedwater pump maintenance window
- February 8, 2016, chemical volume and control system with charging pump CH-1A out of service
- March 21, 2016, train B containment spray with train A containment spray out of service for maintenance

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

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

#### b. Findings

No findings were identified.

## **1R05 Fire Protection (71111.05)**

### Quarterly Inspection

#### a. Inspection Scope

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

- January 8, 2016, intake structure, fire area 31
- January 8, 2016, cable spreading room, fire area 41
- February 9, 2016, east switchgear room, fire area 36A
- February 9, 2016, west switchgear room, fire area 36B and 36C
- March 14, 2016, safety injection and containment spray pump room 21, fire area 1

- March 14, 2016, safety injection and containment spray pump room 22, fire area 2

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

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

b. Findings

No findings were identified.

**1R06 Flood Protection Measures (71111.06)**

a. Inspection Scope

On February 29, 2016, the inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose one plant area containing risk-significant structures, systems, and components that were susceptible to flooding:

- Intake structure

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

These activities constituted completion of one internal flood protection measures sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

**1R07 Heat Sink Performance (71111.07)**

a. Inspection Scope

On March 25, 2016, the inspectors completed an inspection of the readiness and availability of a risk-significant heat exchanger. The inspectors reviewed the data from the performance of component cooling water/raw water heat exchanger AC-1A disassembly, cleaning, visual inspection, and reassembly activities as outlined in EPRI NP-7552.

Additionally, the inspectors walked down component cooling water/raw water heat exchanger AC-1A to observe its performance and material condition and verified that the

heat exchanger was correctly categorized under the Maintenance Rule and was receiving the required maintenance.

These activities constituted completion of one heat sink performance annual review sample, as defined in Inspection Procedure 71111.07.

b. Findings

No findings were identified.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On February 4, 2016, the inspectors observed simulator training for an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the training activities.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity. In addition, the inspectors assessed the operators' adherence to plant procedures, including abnormal operating procedures, emergency action level entry criteria, and other operations department policies.

- January 13, 2016, operators responded to elevated reactor coolant system leakage
- February 16, 2016, operators responded to a CO2 initiation into the turbine generator exciter enclosure
- March 18, 2016, operators responded to an unacceptable void identified in common discharge piping which affected both shutdown cooling heat exchangers
- March 24, 2016, operators responded to a high pressure safety injection pump casing vent valve leak and the resultant unplanned 24 hour technical specification shutdown action statement and yellow risk condition

These activities constituted completion of four quarterly licensed operator performance samples, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

The inspectors reviewed two instances of degraded performance or conditions of safety-related structures, systems, and components:

- February 10, 2016, failure of volume control tank automatic transfer to radioactive waste transfer system
- February 23, 2016, failure of AC-3B component cooling water pump motor

The inspectors reviewed the extent of condition of possible common cause structure, system, and component failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the structures, systems, and components. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of two maintenance effectiveness samples, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- January 20, 2016, planned yellow risk during emergency diesel generator 2 testing
- February 17, 2016, planned yellow risk during emergency diesel generator 2 maintenance window
- February 25, 2016, planned yellow risk during diesel-driven auxiliary feedwater pump maintenance window

- March 9, 2016, planned green risk during turbine-driven auxiliary feedwater pump maintenance
- March 15, 2016, planned yellow risk during high pressure safety injection pump SI-2B maintenance window

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

These activities constituted completion of five maintenance risk assessment and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- February 1, 2016, operability assessment of reactor coolant pump RC-3A degraded seals
- March 18, 2016, operability assessment of materials stored inside containment while at power that were not evaluated as part of the design basis calculations for containment free volume, debris transport, or chemical interactions
- March 18, 2016, operability assessment of the control room envelope during installation of a satellite phone antenna array
- March 22, 2016, operability assessment of potential leak-by of component cooling water pump AC-3A discharge check valve
- March 31, 2016, operability assessment of emergency diesel generator 1 fuel oil injector leakage

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

These activities constituted completion of five operability and functionality review samples as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

**1R18 Plant Modifications (71111.18)**

.1 Temporary Modifications

a. Inspection Scope

On February 19, 2016, the inspectors reviewed a temporary modification to bypass one of three thermistors for the B control room air conditioner compressor. The inspectors verified that the licensee had installed this temporary modification in accordance with technically adequate design documents. The inspectors verified that this modification did not adversely impact the operability or availability of affected structures, systems, or components. The inspectors reviewed design documentation and plant procedures affected by the modification to verify the licensee maintained configuration control.

These activities constituted completion of one sample of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

On January 12, 2016, the inspectors reviewed a permanent modification to upgrade the steam generator blowdown radiation monitor. The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the functionality of the structure, system, or component as modified.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- January 20, 2016, component cooling water heat exchanger inlet valve HCV-2879 maintenance and diagnostic testing
- January 21, 2016, raw water inlet header isolation valve rebuild
- March 23, 2016, containment spray pump SI-3A maintenance
- March 25, 2016, component cooling water heat exchanger AC-1A cleaning and inspection
- March 28, 2016, high pressure safety injection pump SI-2B casing suction vent valve weld replacement
- March 30, 2016, air compressor CA-1A maintenance

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

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

b. Findings

No findings were identified.

**1R22 Surveillance Testing (71111.22)**

a. Inspection Scope

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

In-service tests:

- January 12, 2016, component cooling water system category A and B valve in-service test
- February 16, 2016, raw water pump AC-10B in-service test and post-maintenance operability test

Reactor coolant system leak detection tests:

- January 29, 2016, reactor coolant system daily leak rate test

Other surveillance tests:

- January 22, 2016, cycle sluice gates through full range
- February 5, 2016, monthly surveillance testing of emergency diesel generator 1

- February 8, 2016, quarterly emergency core cooling system gas accumulation detection

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

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

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

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

a. Inspection Scope

The inspectors performed an in-office review of Radiological Emergency Response Plan, Section F, "Emergency Communications," Revision 20. This revision:

- Replaced the Blair CO-OP hotline with notifications of offsite emergency situations using the Washington County emergency call-out system
- Removed references to the computerized dose assessment system
- Updated the following information about the automated emergency response organization call-out system
  - Deleted the interactive notification system connection to the public address system in the training center and administration buildings
  - Deleted references to emergency response organization pagers
  - Added references to the interactive notification system contacting mobile phones
  - Added references to the interactive notification system sending texts and e-mails to the emergency response organization

This 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)(3) and 50.54(q)(4). The inspectors verified that the revision did not decrease the effectiveness of the emergency plan. This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.



These activities constitute completion of one emergency action level and emergency plan changes sample as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

**1EP6 Drill Evaluation (71114.06)**

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on March 1, 2016, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the simulator, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

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

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

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

**40A1 Performance Indicator Verification (71151)**

.1 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of January 1 through December 31, 2015, the inspectors reviewed licensee event reports, maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG 1022, "Event Reporting Guidelines: 10 CFR50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of one safety system functional failures performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Reactor Coolant System Identified Leakage (BI02)

a. Inspection Scope

The inspectors reviewed the licensee's records of reactor coolant system identified leakage for the period of January 1 through December 31, 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of one reactor coolant system leakage performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

**4OA2 Problem Identification and Resolution (71152)**

.1 Routine Review

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

On February 8, 2016, the inspectors selected one issue for an in-depth follow-up regarding gas voiding in the containment spray system. The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately

prioritized the planned corrective actions and that these actions were adequate to correct the condition.

These activities constituted completion of one annual follow-up sample as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

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

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems as applicable. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in Inspection Manual Chapter 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that the licensee made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed the licensee's follow-up actions related to the event to assure that the licensee implemented appropriate corrective actions commensurate with their safety significance.

- Operator response to a leak from the chemical and volume control system on January 13, 2016
- Operator response to an inadvertent carbon dioxide system actuation into the main turbine generator exciter on February 16, 2016
- Operator response to an unacceptable void identified in a common discharge header downstream of both shutdown cooling heat exchangers on March 18, 2016
- Operator response to a high pressure safety injection pump casing vent valve leak and the resultant unplanned 24 hour technical specification shutdown action statement and yellow risk condition on March 24, 2016

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report 05000285/2012-015-01, "Electrical Equipment Impacted by High Energy Line Break Outside of Containment"

On September 16, 2011, while reviewing a draft of the Master List Reconstitution for Electrical Equipment Qualification, the licensee identified that some components located outside of containment may not be qualified for the potential worst case environmental

conditions where they are located. These potential environmental conditions included high energy line breaks and radiological impacts outside containment. The licensee identified a number of components that should have been included in the electrical equipment qualification program. The licensee qualified these components by conducting additional analysis, replacing components with qualified components, providing shielding or electrical isolation capabilities, or moving the component to a location where electrical equipment qualification is not required. This issue was previously inspected as part of the Inspection Manual Chapter 0350 process as Confirmatory Action Letter item 3.b.2, High Energy Line Break Program and Equipment Qualifications. These electrical equipment qualification issues were corrected before Fort Calhoun Station entered plant conditions requiring this equipment. This issue was dispositioned in Inspection Report 05000285/2013018 as VIO 05000285/2013018-01, "Failure to Correctly Translate Design Requirements into Installed Plant Configuration." No additional deficiencies were identified during the review of this licensee event report. This licensee event report is closed.

The licensee also inappropriately concluded that the 60-day reporting criteria began when the event was determined to be reportable. As such, the event was reported beyond the 60-day timeframe required by 10 CFR 50.73. The late reporting of this licensee event report has been entered into the station's corrective action program as Condition Report 2012-03796. This issue was dispositioned by the NRC in Inspection Report 05000285/2013008 as NCV 05000285/2013008-43, "Repetitive Issues Involving Untimely Submittal of Required Licensee Event Reports." No additional deficiencies were identified during the review of this licensee event report. This licensee event report is closed.

.3 (Closed) Licensee Event Report 05000285/2014-005-00, "Technical Specification Violation of Containment Integrity"

On June 27, 2014, the licensee discovered that a test connection on a containment penetration was not capped. Further investigation identified that the test connection cap had not been re-installed following local leak rate testing on November 22, 2013, and this condition existed until it was identified on June 27, 2014. Failure to re-install this test connection cap affected containment integrity and resulted in Operations declaring containment inoperable, entering Technical Specification 2.6(1), "Containment System," and entering Abnormal Operating Procedure 12, "Containment Integrity," until the connection cap was re-installed. The licensee's causal analysis determined that maintenance personnel exhibited weak human performance and independent verification tool usage during the performance of local leak rate testing such that the containment penetration test connection was not restored following the completion of local leak rate testing. To address this condition, the licensee conducted an extent of condition review and identified that no other containment penetrations were affected. The licensee also implemented paired observations between maintenance superintendents and first line supervisors to observe independent and concurrent verifications in the field. In addition, the licensee revised the outage schedule to ensure that containment penetration checklists were performed after all maintenance and local leak rate tests were completed.

The NRC inspectors reviewed the details of this condition including corrective action documents, apparent cause analyses, system descriptions and drawings, and procedures. Based on a review of the condition, the inspectors determined that during

the period that the test connection cap was not installed, the licensee was in violation of Technical Specification 2.6(1) which requires containment to be maintained unless the reactor is in a cold or refueling shutdown condition. Between November 22, 2013, and June 27, 2014, the reactor was not in a cold or refueling condition and containment integrity was not maintained. This violation was identified by the licensee and is discussed in further detail in Section 4OA7 of this report. This licensee event report is closed.

.4 (Closed) Licensee Event Report 05000285/2014-006-00, "Inoperability of Radiation Monitors due to an Error in Technical Specifications"

On September 16, 2014, the NRC identified a typographical error existed in the licensee's Technical Specification Table 3-3, "Minimum Frequencies for Checks, Calibrations and Testing of Miscellaneous Instrumentation and Controls." The error affected the discussion regarding the calibration and testing of area and post-accident radiation monitors. Specifically, Technical Specification Table 3-3 applicable to the containment high-radiation monitors specified calibrating the radiation monitors to at least one decade below 1 R/hr by means of a calibrated radiation source. This is not possible as 1 R/hr is at the low end of the containment high range radiation monitor detection capability and the technical specification should have referred to calibrating the radiation monitors to at least one decade below 10 R/hr. License Amendment 281 was issued on March 3, 2015, and corrected this typographical error. This licensee event report is closed.

.5 (Closed) Licensee Event Report 05000285/2014-007-00, "Plant Trip due to Moisture Intrusion into a Transformer Control Cabinet"

On December 17, 2014, the Fort Calhoun Station reactor tripped from 100 percent power due to a turbine generator trip. The turbine generator trip was caused by the spurious actuation of a sudden pressure relay on unit auxiliary transformer T1-A2 due to moisture intrusion. The licensee conducted a root cause evaluation and determined that they had not identified and eliminated and/or mitigated a single point vulnerability for transformer T1-A2 (i.e., the spurious actuation of one relay resulting in a turbine trip). The licensee has since installed a new pressure relay design that is not subject to a single relay failure vulnerability. The licensee also identified that moisture intrusion contributed to the spurious actuation of the relay and has since sealed the T1-A2 control cabinet and instituted a periodic inspection of the door seal. The licensee response to this event was reviewed and documented in Inspection Report 05000285/2014005 and no additional issues were identified during the review of this licensee event report. This licensee event report is closed.

.6 (Closed) Licensee Event Report 05000285/2015-S01-00, "Security Event due to Misidentified Test Equipment"

On October 2, 2015, security personnel identified a suspicious device during a routine vehicle search in the vicinity of the Protected Area of the plant. The shift manager was informed and he declared a Notification of Unusual Event at 9:05 a.m. for a confirmed security condition or threat which indicates a potential degradation of the level of safety of the plant and does not involve a hostile action. Local and state law enforcement agencies were notified and responded to the plant. The device was subsequently determined to be high voltage testing equipment and the Notification of Unusual Event

was exited at 11:36 a.m. The NRC was notified and the Senior Resident Inspector was on-site and responded to the Notification of Unusual Event. The licensee response to this event was reviewed and documented in Inspection Report 05000285/2015004 and no additional issues were identified during the review of this licensee event report. This licensee event report is closed.

.7 (Closed) Licensee Event Report 05000285/2015-004-00, "Inoperability of Auxiliary Feedwater Trains due to Failure of Steam Generator Isolation Valve"

On June 5, 2015, while in Mode 3, Fort Calhoun Station performed auxiliary feedwater surveillance testing prior to startup from a refueling outage. During the testing, auxiliary feedwater containment isolation valve HCV-1107A failed to open on demand. This valve provides the auxiliary feedwater injection path to steam generator RC-2A from both the turbine and motor-driven auxiliary feedwater pumps. Because this valve feeds both trains of auxiliary feedwater to steam generator RC-2A, the licensee declared both trains inoperable and entered Technical Specification 2.5(1)D. This technical specification requires that actions be taken to immediately restore at least one train of auxiliary feedwater to operable and suspends all mode changes required by other limiting conditions of operations. The licensee also declared auxiliary feedwater containment isolation valve HCV-1108A, the injection valve to steam generator RC-2B, inoperable based on irregular operation while opening.

During the refueling outage, the licensee rebuilt both of the affected valves using new types of elastomers in the valve seals. The licensee determined that the new seals were not rated for the temperature to which they were subjected during plant heat-up and subsequently deformed, causing the valves to bind.

On August 14, 2015, the inspectors completed a reactive inspection at Fort Calhoun Station based upon the risk associated with the loss of both trains of auxiliary feedwater flow to both steam generators and concerns associated with the engineering change processes used by the licensee to replace the original seals. The inspectors documented three findings of very low safety significance (Green) in Inspection Report 0500285/2015011. This licensee event report is closed.

.8 (Closed) Licensee Event Report 05000285/2015-005-00, "Reactor Coolant Leak at Reactor Coolant Pump Seal due to Cyclic Fatigue"

On July 20, 2015, the reactor was shut down from 100 percent power due to a significant leak from reactor coolant pump seal piping. This leakage was subsequently determined to be reactor coolant system boundary leakage and originated from a crack which had formed in the piping weld due to low stress, high cycle fatigue. The licensee response to this event was reviewed and documented in Inspection Report 05000285/2015003. The licensee intends to modify the reactor coolant pump seal piping to reduce the cantilevered load on the piping as well as to increase the weld length during upcoming outages to resolve this issue. No additional issues were identified during the review of this licensee event report. This licensee event report is closed.

.9 (Closed) Licensee Event Report 05000285/2015-006-00, "Unanalyzed Fire Vulnerability due to Inadequate Design"

On October 21, 2015, the licensee identified a circuit vulnerability that could result in the loss of control for the pressurizer heater bank when performing a shutdown from outside the control room. If this condition occurred, operators would be unable to control pressurizer backup heater bank 4, which was relied upon to achieve safe and stable plant conditions for fires that require shutdown from outside the control room. This issue was dispositioned in the NRC Triennial Fire Protection Inspection Report 05000285/2015012. This licensee event report is closed.

.10 (Closed) Violation 05000285/2014009-11, "Failure to Ensure Safe Operations at Design Basis Low River Level"

The inspectors issued a Green cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in Inspection Report 05000285/2014009 for the failure to ensure that the safety-related raw water pumps would be available to ensure safe operations down to the design basis low river level. Specifically, the NRC identified that the current analysis and abnormal operating procedures would not allow operation of the raw water pumps at the design basis low river water level. The licensee responded to this violation in letter LIC-14-0117, issued on October 20, 2014. The licensee completed the analyses for the required minimum water level for the raw water pumps, updated the relevant design calculations, and provided the bases to Abnormal Operating Procedure 1, "Acts of Nature." The licensee entered this issue into the corrective action program as Condition Report 2014-09159 and revised the Updated Safety Analysis Report to document the increased margins. This violation is closed.

.11 (Closed) Violation 05000285/2014009-12, "Failure to Maintain Effectiveness of an Emergency Plan"

The inspectors issued a Green cited violation of 10 CFR 50.54(q)(2), "Conditions of License," in Inspection Report 05000285/2014009 for the failure to maintain the effectiveness of the site's emergency plan. Specifically, contrary to the standard emergency action level scheme, the licensee established a low river level emergency classification criteria "Alert" that was below the raw water pump's minimum suction requirements. The licensee responded to this violation in letter LIC-14-0117, issued on October 20, 2014. The licensee documented this concern in the corrective action program as Condition Report 2014-08757. The licensee submitted a revision to the Emergency Plan Emergency Action Levels to restore compliance. This emergency plan revision was approved by the NRC in letter LIC-15-0029 on February 13, 2015. This violation is closed.

.12 (Closed) Violation 05000285/2014009-13, "Failure to Perform Evaluation for Design Change"

The inspectors issued a Green, Severity Level IV cited violation of 10 CFR Part 50.59, "Changes, Tests, and Experiments," in Inspection Report 05000285/2014009 for the failure to evaluate a design change that permanently substituted a manual action for an automatic action to add water and nitrogen gas to the component cooling water surge tank which may have required prior NRC review and approval. The licensee responded to this violation in letter LIC-14-0117, issued on October 20, 2014. The licensee revised their corrective actions to state that water and nitrogen makeup is no longer needed for

design basis accidents as long as system leakage is less than 32 gallons per day and nitrogen leakage is below 0.65 psig/minute. The licensee implemented procedures to capture these new leakage acceptance criteria. This violation is closed.

.13 (Closed) Violation 05000285/2014009-14, "Failure to Account for Worst Case Diesel Frequency in Fuel Oil Consumption Calculations"

The inspectors identified a Green cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in Inspection Report 05000285/2014009 for the failure to account for the design basis conditions in station calculations. Specifically, the licensee failed to account for worst-case electrical frequency when analyzing diesel fuel oil consumption and storage requirements. The licensee responded to this violation in letter LIC-14-0117, issued on October 20, 2014. The licensee revised Calculation FC08034, "Diesel Fuel Usage during a Severe Flooding Event," to ensure that there was sufficient diesel fuel to support the maximum frequency spectrum of 60.8 hertz for the assumed 7-day operation of the diesel. The licensee entered this issue into their corrective action program as Condition Report 2014-09157 and initiated action to update station calculations. This violation is closed.

.14 (Closed) Unresolved Item 05000285/2013008-30, "Evaluation of Change to Alternate Shutdown Cooling Flowpath"

Introduction. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59, "Changes, Tests, and Experiments," for the failure to recognize that a change to the facility as described in the Updated Safety Analysis Report would require prior NRC review and approval. Specifically, the 10 CFR 50.59 evaluation revised a site procedure, without NRC approval, to substitute automatic flow control of shutdown cooling flow and temperature with manual control using the low pressure safety injection loop injection valves. The licensee's corrective actions included revising the affected procedure to reflect the original automatic flow control. The licensee entered this issue in the corrective action program as Condition Report 2013-15342.

Description. During a review of Engineering Change Modification 54058, "Procedure Change to Allow Closing of HCV-335 while on Alternate Shutdown Cooling," the inspectors identified that the licensee changed a procedure to allow for the replacement of automatic flow and temperature control of shutdown cooling with manual actions. Specifically, the engineering change proposed to close both shutdown cooling heat exchanger isolation valves, HCV-335 and flow control valve FCV-326, while pinning open valve HCV-341 and manually throttling low pressure safety injection loop injection valves to maintain the desired reactor coolant system temperature and flow rate. The inspectors questioned whether the licensee required prior NRC review and approval to make this procedure change since section 9.3.4.3 of the Updated Safety Analysis Report describes how valve FCV-326 normally controls temperature and flow automatically.

This procedure change was questioned by the NRC due to substituting manual actions for automatic control. The licensee made this change with the belief that, based upon the entry conditions for alternative shutdown cooling, the control was not specifically described in the Updated Safety Analysis Report. However, it was not recognized by the licensee that the alternative shutdown cooling flowpath was described in an Updated Safety Analysis Report figure. The licensee reviewed this issue in Condition Report 2013-15342. Action item 7 of Condition Report 2013-15342 changed



Procedure OI-SC-3, "Alternate Shutdown Cooling Utilizing Containment Spray Pumps," back to the previous revision of the procedure which did not include this alternate shutdown cooling method.

The original 10 CFR 50.59 evaluation which changed Procedure OI-SC-3 was approved on October 21, 2011. The changes were incorporated into Revision 22 of Procedure OI-SC-3, dated October 21, 2011. These changes were removed in Revision 30 to Procedure OI-SC-3, dated November 15, 2015.

Analysis. The licensee's failure to implement the requirements of 10 CFR 50.59 and adequately evaluate changes to determine if prior NRC approval is required was a performance deficiency. Because this violation had the potential to impact the NRC's ability to perform its regulatory function, the inspectors evaluated the violation using traditional enforcement. In accordance with Section 2.1.3.E.6 of the NRC Enforcement Manual, the inspectors evaluated this finding using the significance determination process to assess its significance. The inspectors performed an initial screening of the finding in accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 1, 2012. Using Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," dated July 1, 2012, the finding was determined to have very low safety significance (Green) because it: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's Maintenance Rule program. Therefore, in accordance with Section 6.1.d.2 of the NRC Enforcement Policy, the inspectors characterized this performance deficiency as a Severity Level IV violation. The inspectors determined that a cross-cutting aspect was not applicable because the issue involving the failure to perform an adequate 10 CFR 50.59 evaluation was strictly associated with a traditional enforcement violation

Enforcement. Title 10 CFR 50.59, "Changes, Tests, and Experiments," Section (c)(2) requires, in part, that a licensee shall obtain a license amendment prior to implementing a proposed change, test, or experiment if the change, test, or experiment would result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the Updated Safety Analysis Report. Contrary to the above, from October 21, 2011, until November 15, 2015, the licensee failed to obtain a license amendment pursuant to Section 50.90 prior to implementing a proposed change, test, or experiment that would result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the Updated Safety Analysis Report. Specifically, the licensee changed a procedure that would allow manual control of shutdown cooling temperature and flow, instead of the automatic control to maintain temperature and flow as described in the Updated Safety Analysis Report. Because this violation was entered into the corrective action program as Condition Report 2013-15342 to ensure compliance was restored in a reasonable amount of time, and the violation was not repetitive or willful, this Severity Level IV

violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy: NCV 05000285/2016001-01, "Implementing a Procedure Change for Alternative Shutdown Cooling that would have Required NRC Approval."

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

#### **40A5 Other Activities**

1. NRC Temporary Instruction 2515/190 – Inspection of the Proposed Interim Actions Associated with Near-Term Task Force Recommendation 2.1 Flooding Hazard Evaluations

a. Inspection Scope

During the week of November 3 through November 7, 2014, the inspectors performed a partial verification that the licensee's interim action would perform their intended function for beyond-design-basis flooding events up to plant elevation 1036 ft. At that time, the licensee determined that additional interim actions and equipment were needed to address a beyond-design-basis flooding event with a higher water elevation at Fort Calhoun Station.

During the week of February 29 through March 4, 2016, the inspectors completed the inspection activities and independently verified that the licensee's proposed interim actions will perform their intended function for flooding mitigation.

- Visual inspection of the flood protection equipment was performed
- Walkdown for the routing of cables and hoses was performed
- Flood protection features functionality was determined using either visual observation or by review of other documents

The inspectors verified that issues identified were entered into the licensee's corrective action program.

b. Findings

No findings were identified.

This completes the inspection requirements of Temporary Instruction 2515/190.

2. Follow-up of Confirmatory Action Letters or Orders

a. Inspection Scope

By letter, dated December 2, 2013, the licensee committed to perform a series of actions "for sustained improvement" following restart from an extended outage. These commitments were confirmed by the NRC in a Confirmatory Action Letter issued on December 17, 2013.

On February 29 through March 3, 2016, a team of Region IV inspectors completed a preliminary assessment regarding the adequacy of the Fort Calhoun Station Design and Licensing Bases Reconstitution Project (DLBRP). The licensee established the DLBRP to meet their commitments associated with Key Driver 4 (Design and Licensing Basis Control and Use), as well as corrective actions to complete Action Items 2013-05570-026, 2013-05570-076, and 2013-05570-093. Specifically, these action items identify and define the current design and licensing basis, assure the design and licensing basis documents remain current and complete, and validate that the design and licensing basis have been translated into plant operation. The licensee committed to complete these activities by July 20, 2018.

NRC Region IV plans to periodically assess the licensee's progress toward the completion of the activities of the DLBRP and associated corrective actions. These assessments will continue until the licensee has demonstrated satisfactory results toward meeting the commitments in the letter dated December 2, 2013.

b. Observations and Assessments

Design and License Basis Reconstitution Project Assessment

The team assessed the DLBRP process by reviewing the implementing procedures, ensuring that the training and experience of contractor personnel responsible for these activities were appropriate, verifying that DLBRP activities occurred as scheduled, and verifying that the licensee's processes identified and implemented actions for continually improving the DLBRP process. Additionally, the team performed an independent review by sampling applicable design and licensing information to determine if the process was adequately identifying pertinent information to ensure that design and licensing documentation remained current, complete, accurate, and retrievable.

The general approach of DLBRP process consists of the following:

1. Contractor personnel identify information for each updated safety analysis report (USAR) section, design bases documents, licensing bases documents, and NRC correspondence that could potentially be current design or licensing base.
2. Contractor personnel verify and validate the gathered information by identifying supporting references. Applicable references are those that date back to the issuance of the Fort Calhoun Station Operating License through November 1, 2014. Contractor personnel will then identify discrepancies with the current design and licensing bases.
3. Contractor personnel create a USAR Summary Report for each USAR section that includes the results from the activities in 1 and 2 above, and will recommend revisions to the applicable USAR section.
4. The licensee reviews each USAR Summary Report, decides what changes to adopt, and revises the applicable USAR section. To implement the revisions, the licensee will use established Fort Calhoun Station processes.
5. Using new or updated information issued after November 1, 2014, contractor and

licensee personnel will repeat the actions in 1 through 4, and if any differences exist, the licensee will revise the affected USAR sections.

The licensee determined that 131 of 152 USAR sections will be reconstituted and revised. At the date of this assessment, the licensee had completed USAR Summary Reports for 8 of 131 USAR sections and 1 of 131 USAR section revisions.

The team reviewed the DLBRP implementation schedule to determine if the licensee will complete the activities associated with Action Items 2013-05570-026, 2013-05570-076, and 2013-05570-093 by the commitment due date of July 20, 2018. The licensee's schedule showed that activities for completion of the USAR Summary Reports would not be completed until November 2018. At the date of this assessment, the licensee had not established a schedule for completing the USAR section revisions.

Since the DLBRP estimated completion date is after July 20, 2018, the licensee acknowledged that they will need to submit a letter to the NRC to update their status and completion dates for commitments associated with these action items. The licensee entered this issue into the corrective action program as Condition Report 2016-02156.

Based on the progress of the licensee's activities, the team determined that sufficient information is not yet available to determine the status of the Confirmatory Action Letter commitments. The commitments should remain open until more items have been reviewed to determine if the licensee is effectively addressing the issues that necessitated the action item.

c. Findings

No findings were identified.

**4OA6 Meetings, Including Exit**

Exit Meeting Summary

On March 3, 2016, the inspectors presented the initial assessment results of the Design and License Basis Reconstitution Project Assessment to Mr. Shane Marik, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors returned all proprietary information examined during the inspection.

On March 3, 2016, the inspectors presented the Temporary Instruction 2515/190 inspection results to Mr. Shane Marik, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors returned all proprietary information examined during the inspection.

On April 5, 2016, the inspectors conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan and emergency action levels to Mr. E. Plautz, Manager, Emergency Preparedness, and other members of the licensee staff. The licensee acknowledged the issues presented.

On April 12, 2016, the inspectors presented the inspection results to Mr. Todd Tierney, Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

#### **4OA7 Licensee-Identified Violations**

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

- Technical Specification 2.6(1) requires containment integrity to be maintained unless the reactor is in a cold or refueling shutdown condition. If containment integrity is not maintained and the reactor does not meet these cold or refueling shutdown conditions, then containment integrity must be restored within one hour or the reactor is required to be in hot shutdown within the next six hours. From November 22, 2013, through June 27, 2014, a test connection cap was left off of a containment penetration which constituted a loss of containment integrity. Upon discovery of this condition on June 27, 2014, the licensee entered Technical Specification 2.6(1) and Abnormal Operating Procedure 12 for loss of containment integrity. The cap was re-installed and containment integrity was restored within one hour.

The violation is more than minor because it is associated with the configuration control attribute of the Barrier Integrity Cornerstone. Failure to install the containment penetration cap following local leak rate testing on November 22, 2013, resulted in a loss of containment integrity until it was discovered missing on June 27, 2014. This adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (i.e., containment) protect the public from radionuclide releases caused by accidents or events. The violation was reviewed by a Senior Reactor Analyst and was determined to be of very low safety significance because the test connection fitting was a ¼-inch diameter opening. Inspection Manual Chapter 0609, "Significance Determination Process," Appendix H, identifies that small lines (less than 1 to 2 inches in diameter) would not generally contribute to large early release frequency. Therefore, this finding screens to Green. The licensee entered the issue into their corrective action program as Condition Report 2014-07958.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

S. Andersen, Manager, Engineering Projects  
R. Beck, Manager Chemistry, Environmental, and Radwaste  
B. Blome, Manager, Regulatory Assurance  
D. Brehm, Manager, Radiation Protection  
C. Cameron, Principal, Regulatory Specialist  
J. Cate, Manager, Engineering Projects  
H. Childs, Manager, Security  
S. Fatora, Director, Site Work Management  
H. Goodman, Director, Site Engineering  
R. Hugenroth, Manager, Nuclear Oversight  
T. Kaplan, Director, Maintenance  
T. Leaf, Director, Operations  
T. Maine, Manager, Radiation Protection  
S. Marik, Vice President and Chief Nuclear Officer  
E. Matzke, Senior Licensing Engineer  
T. Parent, Engineering  
B. Pearson, Supervisor, Radiation Protection  
E. Plautz, Manager, Emergency Planning  
M. Prospero, Project Management  
J. Shuck, Manager, Systems Engineering  
T. Tierney, Plant Manager  
T. Uehling, Manager, Training

#### **NRC Personnel**

D. Loveless, Senior Reactor Analyst

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

#### Open and Closed

05000285/2016001-01	NCV	Implementing a Procedure Change for Alternative Shutdown Cooling that would have Required NRC Approval (Section 40A3.14)
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Closed

05000285-2012-015-01	LER	Electrical Equipment Impacted by High Energy Line Break Outside of Containment (Section 4OA3.2)
05000285-2014-005-00	LER	Technical Specification Violation of Containment Integrity (Section 4OA3.3)
05000285-2014-006-00	LER	Inoperability of Radiation Monitors due to an Error in Technical Specifications (Section 4OA3.4)
05000285-2014-007-00	LER	Plant Trip due to Moisture Intrusion into a Transformer Control Cabinet (Section 4OA3.5)
05000285-2015-S01-00	LER	Security Event due to Misidentified Test Equipment (Section 4OA3.6)
05000285-2015-004-00	LER	Inoperability of Auxiliary Feed Water Trains due to Failure of Steam Generator Isolation Valve (Section 4OA3.7)
05000285-2015-005-00	LER	Reactor Coolant Leak at Reactor Coolant Pump Seal due to Cyclic Fatigue (Section 4OA3.8)
05000285-2015-006-00	LER	Unanalyzed Fire Vulnerability due to Inadequate Design (Section 4OA3.9)
05000285/2014009-11	VIO	Failure to Ensure Safe Operations at Design Basis Low River Level (Section 4OA3.10)
05000285/2014009-12	VIO	Failure to Maintain Effectiveness of an Emergency Plan (Section 4OA3.11)
05000285/2014009-13	VIO	Failure to Perform Evaluation for Design Change (Section 4OA3.12)
05000285/2014009-14	VIO	Failure to Account for Worst Case Diesel Frequency in Fuel Oil Consumption Calculations (Section 4OA3.13)
05000285/2013008-30	URI	Evaluation of Change to Alternate Shutdown Cooling Flowpath (Section 4OA3.14)
2515/190	TI	Inspection of the Proposed Interim Actions Associated with Near-Term Task Force Recommendation 2.1 Flooding Hazard Evaluations (Section 4OA5.1)

**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-1	Acts of Nature	45
EPIP-TSC-2	Catastrophic Flooding Preparations	17
OI-EW-1	Extreme Weather	33
OP-AA-108-111-1001	Severe Weather and Natural Disaster Guidelines	12

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
PE-RR-AE-1001	Flood Barrier and Sandbag Staging and Installation	22
SA-AA-2114	Winter Safety	3
SO-G-119	Site Wind Generated Missile Protection Standards	2
WC-AA-107	Seasonal Readiness	16

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	FCS Snow Removal Plan	
DBD-56	External Flooding	1
FCSG-64	External Flooding of Site	4
USAR 2.7	Hydrology	11

**Section 1R04: Equipment Alignment**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-AFW-1	Auxiliary Feedwater System Operating Instructions	85
OI-CH-1	Chemical and Volume Control System Normal Operation	96
OI-CS-1	Containment Spray – Normal Operation	51
OP-PM-AFW-0004	Third Auxiliary Feedwater Pump Operability Verification	41
SO-G-96	Planned LCO Entry Criteria and Equipment Reliability Control	15
SO-G-123	Protected Equipment Program	8

Condition Reports

2015-01580    2015-12096    2016-01194



Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
10476	Chemical and Volume Control System P & ID	79
SDBD-CH-108	Chemical and Volume Control System Design Basis Documents	29
SDBD-FW-AFW-117	Auxiliary Feedwater System Design Basis Documents	45
USAR 9.2	Chemical Volume and Control System	27
USAR 9.4	Auxiliary Feedwater System	22
	Daily Plant Status Meeting Report	March 21, 2016

**Section 1R05: Fire Protection**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-06-02	Fire Emergency Uncontrolled Areas of Auxiliary Building	8
AOP-06-03	Fire Emergency Miscellaneous Areas	4
SO-G-28	Station Fire Plan	89
SO-G-28	Station Fire Plan	90
SO-G-102	Fire Protection Program	21

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EA-97-001	Updated Fire Hazards Analysis	18
EA-97-001	Updated Fire Hazards Analysis	19
USAR 9.11	Fire Protection System	25

Condition Reports

2013-02992	2013-18842	2014-08204	2015-08329
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**Section 1R06: Flood Protection Measures**

Condition Reports

2013-04956	2013-14943	2013-16764
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EA-92-057	Fort Calhoun Station Internal Flood Analysis Report	1
EA 08-010	Internal Flooding	0
NRC-15-058	Fort Calhoun Station, Issuance of Amendment RE: Revising Method for Controlling Raw Water Intake Cell Level	June 30, 2015
USAR 9.8	Raw Water System	36

**Section 1R07: Heat Sink Performance**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-340-1002	Service Water Heat Exchanger Inspection Guide	6
PE-RR-CCW-0100	Disassembly, Cleaning, and Repair of CCW Heat Exchanger-Raw Water Side	44

Work Orders

531151

Miscellaneous Documents

Title

Maintenance Rule Functional Scoping Sheet for AC-1A

EPRI NP-7552 Heat Exchanger Performance Monitoring Guidelines

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

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-22	Reactor Coolant Leak	35
AOP-35	CVCS Leak	10
EOP-00	Standard Post Trip Actions	33
EOP-03	Loss of Coolant Accident	38
EPIP-OSC-1	Emergency Classification	48b
OP-AA-101-111	Roles and Responsibilities of On-Shift Personnel	8
OP-AA-101-113	Operator Fundamentals	9

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-AA-106-101	Significant Event Reporting	18

Condition Reports

2010-5317      2016-02927

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
82105G	Simulator Scenario Guide – Loss of Containment Integrity with an Reactor Coolant System Leak	November 23, 2015

**Section 1R12: Maintenance Effectiveness**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-310	Implementation of the Maintenance Rule	9
ER-AA-310-1001	Maintenance Rule-Scoping	4
ER-AA-310-1002	Maintenance Rule Functions	3
ER-AA-310-1003	Performance Criteria Selection	4
ER-AA-310-1004	Maintenance Rule-Performance Monitoring	13
ER-AA-310-1005	Maintenance Rule-Dispositioning Between (a)(1) and (1)(2)	7

Condition Reports

2015-09281      2015-09599      2015-09658      2016-01630      2016-01672  
2016-01698      2016-01712      2016-01714      2016-01715      2016-01716  
2016-01741      2016-01758

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	EEQ Manual	20
	Maintenance Rule Scoping Data Sheet for Volume Control Tank	
	Maintenance Rule Scoping Data Sheet for Component Cooling Water Motor	
	(a)(1) Action Plan for HCV-347/348	

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EA-06-032	Environmental Parameters for Electrical Equipment Qualification	0
EA-FC-00-128	Chemical Volume Control System Scoping, Screening, and Age Management Review for License Renewal	9
LIC-80-0024	OPPD Response to IE Bulletin 79-01B	0
LIC-02-0042	FCS License Renewal Application Technical Information	1
NUMARC 93-01	Industry Guidelines for Monitoring Effectiveness of Maintenance at Nuclear Power Plants	2
RG 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	3
SO-G-56	Qualified Life Program	26
TD C635.0020	Installation, Operation, and Maintenance Instructions for D-100 Valves	0
TM M040.0020	Installation Instructions for Magnatrol Level Control Switches	0
USAR 9.2	Chemical Volume Control System	27
USAR 9.7	Component Cooling Water System	14

### **Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

#### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-600	Risk Management	7
ER-AA-600-1011	Risk Management Administrative Guidance	14
ER-AA-600-1042	On-line Risk Management	9
FCSG-19	Performing Risk Assessments	17
SO-G-96	Planned LCO Entry Criteria and Equipment Reliability Control	15
SO-G-123	Protected Equipment Program	8
WC-AA-104	On-Line Work Control Process	23
OP-PM-AFW-0004	Third Auxiliary Feedwater Pump Operability Verification	41
OP-ST-DG-0002	Diesel Generator 2 Check	78
OP-ST-AFW-3011	Auxiliary Feedwater Pump FW-10, Steam Isolation Valve and Check Valve Tests	25

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-AFW-4	Auxiliary Feedwater Startup and System Operations	92

Condition Reports

2012-15755	2013-03062	2013-04453	2014-15325	2015-04223
2015-07637	2015-07650	2016-00354	2016-01971	

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Equipment Out of Service Quantitative Risk Assessment Tool	
	Protected Equipment List	
	PRA Summary Notebook	14
RG 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	39
NUMARC 93-01	Industry Guidelines for Monitoring Effectiveness Maintenance Nuclear Power Plants	2

**Section 1R15: Operability Determinations and Functionality Assessments**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-35	Reactor Coolant Pump Malfunctions	7
CC-FC-201-AD-CRENV	Control Room Envelope Breach Control Supporting Documentation	0
OI-CO-1	Containment Closeout	48
OP-FC-108-115	Operability Determinations	2
PED-GEI-34	Evaluation of Seismically Induced System Interaction	20
SE-ST-CCW-3002	CCW Pump Base Line Curve Procedure	18
SO-G-107	Storage of Transient Equipment and Material to Prevent Seismic Interactions or Tornado Pressurization	10

Condition Reports

2014-07831	2015-01749	2015-09205	2015-12558	2015-12930
2015-13884	2015-14230	2016-00264	2016-00963	2016-01289
2016-02867	2016-03020			

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
89626	Reactor Coolant Pump N-7500 Seal Cartridge Drawing	8
EA 92-072	Diesel Generator Loading Transient	8A
LS-AA-1010	Exelon Reportability Reference Manual	27
LS-FC-1400	Event Reporting Guidelines	0
FC 06860	Reactor Coolant Pump Seal Code Stress Analysis	0
PBI 442968-06N	Plant Barrier Impairment supporting the Satellite Phone Antenna Array Installation	0
TD B580.0020	Instruction Manual for Reactor Coolant Pump	1
TS 2.1	Reactor Coolant System Technical Specifications	246
TS 2.12.1	Control Room Air Filtration System	257
USAR 4.3	Reactor Coolant System	42

**Section 1R18: Plant Modifications**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-22	Reactor Coolant Leak	35
EOP-4	Steam Generator Tube Rupture	28
LS-AA-104	Exelon 50.59 Review Process	10
LS-AA-104-1000	50.59 Resource Manual	9
LS-AA-104-1002	50.59 Applicability Review Form	5
OP-FC-108-115	Operability Determinations	2

Condition Reports

2015-13111	2015-13389	2015-13476	2016-00237	2016-00293
2016-00334	2016-00401	2016-00456	2016-00835	2016-01411
2015-13814				

## Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Control Room Logs	
CH-ODCM-0001	Offsite Dose Calculation Manual	24
EC 42006	Replacement of Radiation Monitor Components	0
EP-FC-120-1004	10 CFR 50.54(q) Change Evaluations	0
EP-FC-120-1006	EP Reportability – Loss of Emergency Response Capability	1
EPIP-EOF-6	Offsite Dose Assessment Using the Unified RASCAL Interface	49
LS-AA-1020	Reportability Tables and Decision Trees	23
TBD-EPIP-OSC-1A	Recognition of Category A – Abnormal Radiation Levels / Radiological Effluents	2A
Temporary Configuration Change	EC 67682, Bypass one of three compressor thermistors for VA-46B-comp	0
USAR 11.2	Radiation Protection and Monitoring	17
USAR 14.4	Steam Generator Tube Rupture Accident	16
USAR 9.10	Heating Ventilation and Air Conditioning System	38
50.59	50.59 Review for TCCP/EC67682	December 14, 2015

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EM-PM-EX-1000	480 Volt Motor Inspection	27
ER-AA-340-1002	Service Water Heat Exchanger Inspection Guide	6
HU-AA-104-101	Procedure Use and Adherence	5
IC-RR-VX-0409	Diagnostic Testing of Air Operated Valves	20
MA-AA-716-012	Post Maintenance Testing	20
MD-PM-MX-1000	Periodic Sampling or Addition of Lubricating Oil	38
MM-RR-VX-0450	Inspection and Repair of Bettis Spring Return Valve Actuators	14
OP-ST-CCW-3001A	Component Cooling Water Exercise Test	15

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-ST-VX-3005A	Component Cooling Water Remote Indication Verification Test	6
PE-RR-CCW-0100	Disassembly, Cleaning and Repair of CCW Heat Exchanger – Raw Water Side	47
SPP-7.1	Weld and Base Metal Repair	4
SO-M-103	System Cleanliness	15
WC-AA-104	Integrated Risk Management	23

Condition Reports

2010-1017	2015-06100	2015-13437	2015-13679	2016-00346
2016-02899	2016-02927	2016-03118	2016-03141	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Weld Data Form for WO 580386	March 24, 2016
E-23866-210-130	Safety Injection and Containment Spray System Flow Diagram	34
EA-95-001	Heavy Load Drop Analysis	0
USAR 14.24	Heavy Load Incident	26
876	High Pressure Safety Injection Drawing	6
10092, File 18674	Component Cooling Heat Exchanger	10
11405-E-5	480V Auxiliary Power One Line Diagram	32
11405-E-143	480V SWGR 1B3C, BKR 1B3C-6 (Unit 503B) Schematic SI-3A	28
11405-M-100	Flow Diagram Raw Water P&ID	105
11405-M-263	Flow Diagram Compressed Air	72

Work Orders

517534    519049    531151    548840    563401    580386



## Section 1R22: Surveillance Testing

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-ST-CCW-3006B	Component Cooling Category A and B Valve Exercise Test (for the C and D Valves)	
OP-ST-DG-0001	Diesel Generator 1 Check	87
OP-ST-RC-3001	Reactor Coolant System Leak Rate Test	7
OP-ST-RW-3002A	Raw Water System Category A and B Valve Exercise Test	21
OP-ST-RW-3005	Raw Water Pump, Post Maintenance Operability Test	1
SO-G-23	Surveillance Test Program	
QC-ST-ECCS-0001	Quarterly ECCS Gas Accumulation Detection	16

### Work Orders

555436

### Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ASME OM Code	Operations and Maintenance of Nuclear Power Plants	1998
DBD-112	Emergency Diesel Generators Design Basis Document	31
TS 2.7	Electrical Systems	264
TS 3.1	Surveillance Requirements	182
TS 3.3	Reactor Coolant System Testing Surveillances	230
USAR 3.4.6.5	In-Service Inspection and Testing of ASME Code Class 1,2, and 3 Pumps, Valves, and Snubbers	17
USAR 8.4	Emergency Power Sources	19
USAR 9.8	Raw Water System	30

### Condition Reports

2016-00306	2016-00309	2016-00328	2016-00329	2016-01461
2016-01426				

## Section 1EP6: Drill Evaluation

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-1	Acts of Nature	10
AOP-9	High Radioactivity	11
AOP-18	Loss of Raw Water	8b
EOP-00	Standard Post Trip Actions	31
EOP-03	Loss of Coolant Accident	37a
EOP-7	Station Blackout	18
EOP-20	Functional Recovery Procedure	28
EPIP-EOP-7	Protective Actions Guidelines	26
EPIP-OSC-1	Emergency Classification	48a

### Miscellaneous Documents

<u>Title</u>	<u>Date</u>
Fort Calhoun Station Drill Guide	March 1, 2016

## Section 4OA1: Performance Indicator Verification

### Condition Reports

2016-00355      2016-00363

### Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Reactor Operations Logs 1/1/15 – 12/31/15	
LER 2013-014	Unqualified Components Used in Safety System Control Circuit	2
LER 2015-002	Inoperable Auxiliary Feedwater System Due to Inadequate Procedure Change	0
LER 2015-003	Containment Spray Inoperable Due to Original Design	0
LER 2015-004	Inoperability of Auxiliary Feedwater Trains Due to Failure of a Steam Generator Isolation Valve	0

## Section 40A2: Problem Identification and Resolution

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
PI-AA-120	Issue Identification and Screening Process	1
PI-AA-125	Corrective Action Program (CAP) Procedure	2
QC-ST-ECCS-0001	Quarterly ECCS Gas Accumulation Detection	15

### Condition Reports

2014-12370      2015-11095      2015-13800

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
35740	Containment Spray Pump Discharge to Heat Exchanger AC-1A Drawing	9
FC0754	Gas-Water Waterhammer Evaluations for the Fort Calhoun Containment Spray Piping	1
LS-AA-1020	Reportability Tables and Decision Trees	23
OP-FC-108-115	Operability Determinations	2
Opeval 14-017	Gas Accumulation in the Containment Spray Headers at Monitoring Points CS-4 and CS-5	1

## Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-6	Fire Emergency	29
AOP-12	Loss of Containment Integrity	8
AOP-22	Reactor Coolant Leak	35
AOP-35	CVCS Leak	10
EPIP-OSC-1	Emergency Classification	48b
OI-FP-1	Fire Protection System Water System	86
OI-FP-4	Fire Detection Systems	52
OP-AA-101-111	Roles and Responsibilities of On-Shift Personnel	8
OP-AA-101-113	Operator Fundamentals	9
OP-AA-106-101	Significant Event Reporting	18

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-MW-201-007	Fire Protection System Impairment Control	7
SO-G-28	Station Fire Plan	90
SO-G-102	Fire Protection Program Plan	21
SO-G-103	Fire Protection Operability and Surveillance Requirements	28

### Condition Reports

1998-01892	2014-07958	2014-11479	2014-15313	2014-15316
2014-15325	2014-15363	2015-09023	2015-09130	2015-11588
2015-11613	2015-11648	2016-00381	2016-00382	2016-01525
2016-01528	2016-02471	2016-02927		

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
50.72 Notification	Shutdown Cooling Pipe Void	March 18, 2016
LIC-14-0115	Special Report on Inoperability of Containment Accident Radiation Monitor RM-091A/B for Post-Accident Monitoring	September 25, 2014
PED-GEI-4	Fire Protection System Interaction	8
TS 2.3(2)(e)	Emergency Core Cooling System	221
TS Amendment 281	Approval of Change to TS 3.1, Table 3-3, Item 3.c	March 3, 2015
USAR 9.11	Fire Protection System	28

## **Section 40A5: Other Activities**

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FCS-203087-PM	Design & Licensing Basis Reconstitution Project Manual	3
FCS-203087-PP	Design & Licensing Basis Reconstitution Project Plan	4
FCS-203087-P-002	Communication Controls	0
FCS-203087-P-004	Deviation Identification and Processing	3
FCS-203087-P-007	Review of Plant Documents Associated with Reconstituted [Updated Safety Analysis Report] Sections	1

## Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FCS-203087-WI-001	Licensing Commitment Review	11
FCS-203087-WI-002	Commitment Validation	8
FCS-203087-WI-003	Reports	12
FCS-203087-WI-004	Modification Review	4
FCS-203087-WI-006	10 CFR 50.59 Review	2
NO-FC-10	Quality Assurance Topical Report	4
OCAG – 2	Operational Contingency Action Guideline: Less than 1036 MSL Beyond Design Basis Flood Mitigation	5
OCAG – 3	Operational Contingency Action Guideline: Mitigating Beyond Design Basis Flooding Greater than EI 1036' with RCS Intact	0
OCAG – 4	Operational Contingency Action Guideline: Mitigating Beyond Design Basis Flooding Greater than EI 1036' with RCS Open	0
OP-FC-108-115-AD-ODQRB	Operability Determination Oversight and Monitoring	0
OP-FC-108-115	Operability Determinations	2
PED-QP-14	Use of Engineering Judgement	8
PE-RR-AE-1004	Installation of Beyond Design Basis Flood Equipment for Less than 1036 MSL Flood	2
PE-RR-AE-1007	Emergency Portable Equipment Diesel Generator Off-Line Inspection and Maintenance	0
PE-RR-AE-1008	Emergency Portable Equipment Full System Test and Maintenance	0
PE-RR-AE-1009	Installation of Flood Equipment Greater than EI 1036' Floods with RCS Intact	0
PE-RR-AE-1010	Installation of Flood Equipment for Greater than EI 1036' Floods with RCS Not Intact	0
PE-RR-MS-0407	Inspection and Repair of Main Steam Dump Valves TCV-909	11

## Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EA-FC-00-002	FCS Degraded Voltage Protection Analysis, ETS-2.08	1

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FC07245	FCS LOCA RW/CCW Analysis with No Containment Spray	0
FC07259	FCS RW/CCW Gothic Model – Additional Cases	2
FC07249	Raw Water System Operability Curves – One Raw Pump Operation & Two Raw Pump Operation	0

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
Contract 754	Steam Generator Feed Pumps, Condensate Pumps, and Heater Drain Pumps for Fort Calhoun Station – Unit No. 1	May 17, 1967
Contract 763	Piping and Mechanical Equipment for Fort Calhoun Station – Unit No. 1	May 17, 1967
Contract 765	Electric Installations for Fort Calhoun Station – Unit No. 1	May 29, 1969
Contract 758	4160 and 480 Volt Power Switchgear and Accessories for Fort Calhoun Station – Unit No. 1	October 16, 1967
Contract 755	Power Transformers and Accessories	May 17, 1967
EA-14-017	Beyond Design Basis Flood Mitigating Strategies	0
EC 65401	DLBRP Project Report, USAR Section 2.4 “Seismology”	October 19, 2015
FCS-203087-TM	AMEC Foster Wheeler Training Matrix	February 24, 2016
FCS-203087-USAR-8.2	Verification Summary Report Final	0
FCS-203087-USAR-9.8	USAR-9.8 Verification Summary Report	0
FCS-203087-USAR-14.1	Verification Summary Report Final	0
LIC-13-0105	License Amendment Request (LAR) 13-03	August 16, 2013
SL-012448	Fort Calhoun Station Flood Hazard Reevaluation Report	0

Condition Reports

2013-05570	2014-13115	2014-13651	2015-03961
2015-14005	2015-14112	2015-14137	2016-01366

2016-01368	2016-01869	2016-01949	2016-01953
2016-01993	2016-02030	2016-02096	2016-02128
2016-02156	2016-02157	2016-02160	2016-02161
2016-02456			

Lessons Learned Forms

FCS203087LL001	FCS203087LL0021	FCS203087LL0022	FCS203087LL0024
FCS203087LL0026	FCS203087LL029		