



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

August 3, 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 05000285/2016002**

Dear Mr. Marik:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. On July 14, 2016, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved a violation of NRC requirements. 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 the 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 the 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

- 2 -

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Sincerely,

/RA/

Geoffrey B. Miller, Branch Chief
Project Branch D
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000285/2016002
w/ Attachment: Supplemental Information

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S. Marik

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Letter to Shane M. Marik from Geoffrey B. Miller dated August 3, 2016

SUBJECT: FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT
NUMBER 05000285/2016002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000285
License: DPR-40
Report: 05000285/2016002
Licensee: Omaha Public Power District
Facility: Fort Calhoun Station
Location: 9610 Power Lane
Blair, NE 68008
Dates: April 1 through June 30, 2016
Inspectors: S. Schneider, Senior Resident Inspector
S. Janicki, Acting Resident Inspector
S. Money, Acting Resident Inspector
M. Williams, Reactor Inspector
Approved By: Geoffrey B. Miller
Chief, Project Branch D
Division of Reactor Projects

SUMMARY

IR 05000285/2016002; 04/01/2016 - 06/30/2016; Fort Calhoun Station; Problem Identification and Resolution, Follow-up of Events and Notices of Enforcement Discretion

The inspection activities described in this report were performed between April 1 and June 30, 2016, by the resident inspectors at Fort Calhoun Station and inspectors from the NRC's Region IV office. Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. 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: Initiating Events

- Green. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.8.1., for failure to establish, implement, and maintain a procedure recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Specifically, the licensee failed to develop adequate procedures for testing equipment important to safety. The licensee failed to identify and mitigate all possible turbine logic trip signals when testing Distributed Control System logic. Following the logic modification of the Turbine Control System, post modification testing inserted two Emergency Trip System test signals which caused an automatic turbine trip resulting in an automatic reactor protective system scram actuation.

Failure to establish, implement, and maintain procedures as required by technical specifications is a performance deficiency. The performance deficiency is more than minor because it adversely affected the procedure quality attribute of the initiating event cornerstone to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee failed to mitigate all possible turbine trip signals while testing the Distributed Control System which caused the turbine to trip and thereby caused a loss of load reactor trip. Using NRC Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, "Initiating Events Screening Questions," the finding screened as having very low safety significance (Green) because although the deficiency resulted in a reactor trip, the trip was uncomplicated and mitigating equipment remained unaffected. This finding has a cross-cutting aspect in the teamwork component of the human performance cross-cutting area because the licensee did not ensure that individuals and work groups communicate across organizational boundaries to ensure nuclear safety is maintained. Specifically, the Distributed Control System expert did not review the post modification testing procedure prior to implementation [H.4]. (Section 4OA3)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green, non-cited violation of 10 CFR 50, Appendix B, Criterion III, design control, associated with the licensee's failure to perform an adequate evaluation of the service life of component cooling water pump motors. Specifically, the licensee operated component cooling water pump motors beyond the vendor recommended

horsepower, temperature and voltage limits for the pumps which resulted in the potential for early winding failure of the motors. The licensee's existing calculation determined a component cooling water pump motor life of 16.9 years. During the inspection, the licensee re-evaluated component cooling water pump motor life and determined the expected motor life was actually between 6.8 (if degraded voltage is considered) and 7.2 years. Actual in-service life of the longest operating component cooling water pump was approximately 6.13 years. The licensee entered this issue into the corrective action program as Condition Report 2016-04319.

The inspectors determined that the failure to adequately evaluate the service life of the component cooling water pump motors is a performance deficiency. This performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The inspectors determined the finding was of very low safety significance in accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012, because although the finding was a deficiency affecting the design of a mitigating system, it did not result in a loss of operability or functionality. Specifically, although there was a significant reduction in the calculated service life of the component cooling water pump motors, the actual in-service life of the longest operating component cooling water pump was approximately 6.13 years, which is still encompassed by the revised service life calculation. The finding does not have a cross-cutting aspect because the failure to perform an adequate service life evaluation for component cooling water pump motors is not indicative of current licensee performance. The licensee's current design process requires reviews of in-service temperature effects on equipment service life including pump motors. (Section 40A2)

PLANT STATUS

The unit began the inspection period at 100 percent power. On June 22, 2016, an unplanned automatic reactor trip occurred due to a main turbine loss of load. On June 23, 2016, the licensee commenced a reactor startup and power ascension. From June 24, 2016, to June 27, 2016, the licensee maintained 12 percent reactor power while performing troubleshooting and cleaning of the Electrohydraulic Control system. On June 27, 2016, the licensee synchronized the turbine generator to the grid and began raising power from 12 percent power to 98 percent power. Fort Calhoun operated at 98 percent power for the remainder of the inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Summer Readiness for Offsite and Alternate AC Power Systems

a. Inspection Scope

On June 8, 2016, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open condition reports for these systems. The inspectors walked down the switchyard to observe the material condition of equipment providing off-site power sources. The inspectors verified that the licensee's procedures included appropriate measures to monitor and maintain availability and reliability of the off-site and alternate-ac power systems.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

.2 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On June 8, 2016, the inspectors completed an inspection of the station's readiness for seasonal extreme weather conditions. The inspectors reviewed the licensee's adverse weather procedures for seasonal high temperatures and evaluated the licensee's implementation of these procedures.

The inspectors selected two risk-significant systems that were required to be protected from seasonal high temperatures:

- component cooling water
- offsite power (switchyard)

The inspectors reviewed the licensee's procedures and design information to ensure the systems would remain functional when challenged by adverse weather. The inspectors verified that operator actions described in the licensee's procedures were adequate to maintain readiness of these systems. The inspectors walked down portions of these systems to verify the physical condition of the systems.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walk-Down

a. Inspection Scope

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

- April 14, 2016, control room air conditioning following maintenance
- April 19, 2016, component cooling water system during an intake structure cell outage affecting a raw water system pump
- June 10, 2016, chemical and volume control system following maintenance
- June 28, 2016, raw water pump AC-10B lineup while CW-14A sluice gate is closed

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 four partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

.2 Complete Walk-Down

a. Inspection Scope

On April 18, 2016, the inspectors performed a complete system walk-down inspection of the high pressure safety injection system. The inspectors reviewed the licensee's procedures and system design information to determine the correct system lineup for the existing plant configuration. The inspectors also reviewed open condition reports, in-process design changes, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 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:

- April 5, 2016, upper mechanical penetration room, fire area 23
- April 20, 2016, emergency diesel generator 2 room, fire area 35B
- April 28, 2016, component cooling water heat exchanger room, fire area 33
- May 16, 2016, diesel-driven auxiliary feedwater pump room, fire area 46
- June 8, 2016, auxiliary feedwater/air compressor room, fire area 32
- June 29, 2016, intake structure, fire area 31

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.

.2 Annual Inspection

a. Inspection Scope

The inspectors completed their annual evaluation of the licensee's fire brigade performance. This evaluation included observation of an announced fire drill on May 24, 2016. During this drill, the inspectors evaluated the capability of the fire brigade members, the leadership ability of the brigade leader, the brigade's use of turnout gear and fire-fighting equipment, and the effectiveness of the fire brigade team's operation. The inspectors also reviewed whether the licensee's fire brigade met NRC requirements for training, dedicated size and membership, and equipment.

These activities constituted one annual inspection sample, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On May 31, 2016, the inspectors completed an inspection of underground bunkers susceptible to flooding. The inspectors selected underground bunkers that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment:

- Manhole MH-5B
- Manhole MH-31

The inspectors observed the material condition of the cables and splices contained in the bunker and looked for evidence of cable degradation due to water intrusion. The inspectors verified that the cables and vaults met design requirements.

These activities constituted completion of one bunker/manhole sample, as defined in Inspection Procedure 71111.06.

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 May 17, 2016, the inspectors observed simulator training for an operating crew in response to a small break loss of coolant casualty combined with a loss of off-site power. 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.

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.

- April 21, 2016, operators responded to control element assembly being unable to move
- June 22, 2016, operators responded to a turbine trip which caused an automatic reactor trip
- June 23, 2016, operators commenced a reactor start-up and power ascension

These activities constituted completion of three 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 condition of safety-related structures, systems, and components:

- May 19, 2016, 480 volt electrical distribution (a)(1) action plan
- May 31, 2016, component cooling water (a)(1) action plan

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, or 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:

- April 14, 2016, planned yellow risk during emergency diesel generator 2 testing
- April 19, 2016, planned yellow risk during motor-driven auxiliary feedwater pump maintenance
- April 21, 2016, emergent risk following charging pump 1A coupling failure
- May 24, 2016, planned yellow risk during emergency diesel generator 1 testing
- June 27, 2016, forced outage shutdown risk including assessment of the increased likelihood of turbine valve malfunctions due to Electro Hydraulic Control system performance issues

The inspectors verified that these 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 assessments.

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected structures, systems, and components.

These activities constituted completion of five maintenance risk assessments 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 seven operability determinations and functionality assessments that the licensee performed for degraded or nonconforming structures, systems, or components:

- April 13, 2016, operability assessment of emergency diesel generator 1 lube oil silicon levels
- April 15, 2016, operability assessment of control room envelope missile evaluation
- May 19, 2016, past operability assessment of shutdown cooling piping void
- May 2, 2016, operability assessment of CH 1A coupling replacement
- June 6, 2016, operability assessment of reactor coolant pump 3A degrading upper seal
- June 6, 2016, operability assessment of component cooling water pump AC-3A, elevated pump motor winding temperatures
- June 27, 2016, operability assessment of emergency diesel generator 2 lube oil leak

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

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

Permanent Modifications

a. Inspection Scope

On April 15, 2016, the inspectors reviewed a permanent plant modification to replace a chemical and volume control system drain valve and cap with a welded cap. 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 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 five post-maintenance testing activities that affected risk-significant structures, systems, or components:

- April 14, 2016, charging system pump 1B system modification
- April 19, 2016, component cooling water heat exchanger bypass valve loop calibration
- April 27, 2016, emergency diesel generator 1 overhaul
- May 19, 2016, component cooling water pump AC-3B maintenance and testing
- June 1, 2016, install new component cooling water pump AC-3A motor

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, or components.

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

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

During the station's forced outage due to a turbine generator and subsequent reactor trip the inspectors evaluated the licensee's outage activities. The inspectors verified that the licensee considered risk in developing and implementing the outage plan and appropriately managed personnel fatigue and controlled hot shutdown plant conditions. This verification included the following:

- Review of the licensee's outage schedule
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Observation and review of Electro Hydraulic Control system corrective actions
- Monitoring of startup activities

These activities constituted completion of one forced outage sample as defined in Inspection Procedure 71111.20.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed four 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:

- May 31, 2016, component cooling water pump (AC-3A) in-service test
- June 21, 2016, room 22 safety injection/containment spray pumps and valve exercise in-service test

Other surveillance tests:

- May 1, 2016, main steam category B/C valve exercise test (turbine-driven auxiliary feedwater steam isolation surveillance test)
- June 9, 2016, Channel B Safety Injection, Containment Spray and Recirculation Actuation Signal Test

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 test 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 four surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Training Evolution Observation

a. Inspection Scope

On May 17, 2016, the inspectors observed simulator-based licensed operator requalification training that included implementation of the licensee's emergency plan. 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 evaluators and entered into the corrective action program for resolution.

These activities constituted completion of one training 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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours (IE01)

a. Inspection Scope

The inspectors reviewed licensee event reports for the period of March 2015 through March 2016 to determine the number of scrams that occurred. The inspectors compared the number of scrams reported in these licensee event reports to the number reported for the performance indicator. Additionally, the inspectors sampled monthly operating logs to verify the number of critical hours during the period. 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 data reported.

These activities constituted verification of the unplanned scrams per 7000 critical hours performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed operating logs, corrective action program records, and monthly operating reports for the period of March 2015 through March 2016 to determine the number of unplanned power changes that occurred. The inspectors compared the number of unplanned power changes documented to the number reported for the performance indicator. Additionally, the inspectors sampled monthly operating logs to verify the number of critical hours during the period. 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 data reported.

These activities constituted verification of the unplanned power changes per 7000 critical hours performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Unplanned Scrams with Complications (IE04)

a. Inspection Scope

The inspectors reviewed the licensee's basis for including or excluding in this performance indicator each scram that occurred between March 2015 and March 2016. 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 data reported.

These activities constituted verification of the unplanned scrams with complications performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

40A2 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 condition report screening 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 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program, performance indicators, system health reports, and other documentation to identify trends that might indicate the existence of a more significant safety issue. The inspectors verified that the licensee was taking corrective actions to address identified adverse trends.

These activities constituted completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

Equipment Reliability

In NRC Inspection Report 05000285/2015004, the inspectors documented a continuing adverse trend in equipment reliability at Fort Calhoun Station. The inspectors reviewed equipment reliability challenges from 2014 through the second quarter of 2016. These challenges resulted in equipment unavailability, unplanned technical specification entries, operator burdens, and in some cases, plant transients. Of more recent concern were a number of equipment reliability issues during the first quarter of 2016 that affected safety system availability and plant performance. Examples of equipment reliability issues during this time included a chemical and volume control system leak in January, a component cooling water pump motor failure in February, and a high pressure safety injection pump suction valve weld failure in March. The licensee continues to reduce backlogs in open operability determinations and temporary configuration changes. In addition, the licensee's plant health committee continues to focus on their Top 10 equipment list to resolve those critical items. The licensee engineering leadership team remains committed to the continuing improvement of the boric acid corrosion control and maintenance rule programs.

The inspectors monitored equipment reliability over the past two quarters. Although some improvement has been noted, such as the reduction in the number of long term operability evaluations, the inspectors continue to observe equipment reliability issues at Fort Calhoun Station as exemplified by the more recent chemical and volume control leak, component cooling water pump motor failure, and the high pressure safety injection pump suction valve weld failure. The inspectors have determined that continued monitoring of the licensee's progress in improving equipment reliability at the Fort Calhoun Station is warranted and will be evaluated with the results documented in the next semiannual trend review.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues – Equipment Service Life Evaluations

a. Inspection Scope

On June 9, 2016, the inspectors selected an issue for in-depth follow-up regarding equipment service life evaluations and the preventive maintenance program implementation from these evaluations. The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and status of corrective actions. The inspectors verified that the licensee appropriately prioritized the 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.

.4 Annual Follow-up of Selected Issues – Component Cooling Water Pump Motor Failure and Equipment Service Life Calculation

a. Inspection Scope

On June 1, 2016, the inspectors selected an issue for in-depth follow-up regarding the Component Cooling Water (CCW) pump equipment service life calculation following a CCW pump motor failure in February of 2016. The inspectors assessed the licensee's problem identification threshold, cause analysis, extent of condition review and status of corrective actions.

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

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, associated with the licensee's failure to perform an adequate evaluation of the service life of Component Cooling Water (CCW) pump motors.

Description. The inspectors conducted an in-depth review of equipment service life calculations associated with CCW pump motors following the failure of the CCW pump B motor in February 2016. The licensee operates the CCW pump motors beyond vendor recommended horsepower, temperature, and voltage limits for the pumps which results in the potential for early winding failure of the motors. Since the licensee routinely operates the CCW pump motors beyond vendor recommendation, the inspectors questioned the licensee regarding the basis for a design calculation that concluded that CCW pump motors had a service life of 16.9 years. A subsequent review of the basis of the existing calculations by the licensee identified that the 16.9 year service life was non-conservative and that a more reasonable service life of between 6.8 (assuming

degraded voltage) and 7.2 years would be expected. Actual in-service life of the longest operating CCW pump was approximately 6.13 years.

Analysis. The inspectors determined that the failure to adequately evaluate the service life of the CCW pump motors is a performance deficiency. The performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The inspectors determined the finding was of very low safety significance (Green) in accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, because although the finding was a deficiency affecting the design of a mitigating system, it did not result in a loss of operability or functionality. Specifically, although there was a significant reduction in the calculated service life of the CCW pump motors, the actual in-service life of the longest operating CCW pump was approximately 6.13 years, which is still encompassed by the revised service life calculation. The finding does not have a cross-cutting aspect because the failure to perform an adequate service life evaluation for CCW pump motors is not indicative of current licensee performance. The licensee's current design process requires reviews of in-service temperature effects on equipment service life including pump motors.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that "design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program." Contrary to the above, prior to May 4, 2016, the licensee's design control measures failed to provide for verifying or checking the adequacy of design of the CCW pump motors, a safety-related component to which Appendix B applies, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. Specifically, the licensee failed to verify or check the adequacy of the design calculations for CCW pump motor service life given that these pumps were operated beyond vendor recommendations. Because this violation is of very low safety significance and the violation was documented in the licensee's corrective action program as Condition Report 2016-04319, this violation is being treated as a non-cited violation, consistent with section 2.3.2 of the NRC enforcement policy (NCV 05000285/2016002-01, "Failure to Perform an Adequate Evaluation of Service Life for Component Cooling Water Pump Motors.")

40A3 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 control element assembly 24 unable to move on April 21, 2016
- Operator response to a reactor trip due to a turbine trip during distributed control system testing on June 22, 2016

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

b. Findings

Introduction. The inspectors reviewed a Green, self-revealing, non-cited violation of Technical Specification 5.8.1.a for failure to establish, implement, and maintain a procedure recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Specifically, the licensee failed to develop adequate procedures for testing equipment important to safety. The licensee failed to identify and mitigate all possible turbine logic trip signals when testing Distributed Control System (DCS) logic. This led to an automatic turbine trip resulting in an automatic reactor protective system scram actuation.

Description. On June 22, 2016, post modification testing (PMT) was in progress to test DCS logic modifications made to the Turbine Control system while the reactor was operating at full power. The licensee modified the DCS to eliminate a potential single point vulnerability by changing the signal selector block from median-low to median-high. With this change, the selector block compares the three Emergency Trip System (ETS) transmitter pressure inputs and selects the middle value to be median when three inputs are available. When only two ETS inputs are available, the higher value of the two is selected to be the median. Each input receives a deviation alarm when it deviates by greater than 60 psig from the median selected. Two ETS pressure deviation signals cause the turbine to trip. Maintenance technicians downloaded the modification to the turbine control system control processor successfully. During the post modification testing, the technicians placed one ETS input in manual with a simulated pressure of 1800 psig and a second ETS input in manual with a simulated pressure of 1900 psig. The third input remained in automatic and indicated 2000 psig. When the second input was placed in manual with 1900 psig, the first and the third pressure inputs received a deviation alarm due to the pressure differential between the inputs exceeding 60 psig. This resulted in tripping the turbine. The tripped turbine caused the reactor to trip on loss of load. The licensee had not identified the two deviation trip path during the development or reviews of the PMT procedure.

Analysis. Failure to establish, implement, and maintain procedures required by technical specifications is a performance deficiency. The performance deficiency is more than minor because it adversely affected the procedure quality attribute of the initiating event cornerstone to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee failed to mitigate all possible turbine trip signals while testing the DCS which caused the turbine to trip and, thereby, caused a loss of load reactor trip. Using NRC Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings

At-Power,” Exhibit 1, “Initiating Events Screening Questions,” the finding screened as having very low safety significance (Green) because although the deficiency resulted in a reactor trip mitigation equipment remained unaffected. This finding has a cross-cutting aspect in the teamwork component of the human performance cross-cutting area because the licensee did not ensure that individuals and work groups communicate across organizational boundaries to ensure nuclear safety is maintained. Specifically, the reviews of the PMT procedure were not adequate prior to implementation [H.4].

Enforcement. Technical Specification 5.8.1.a states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a., states, in part, that, “maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.” Contrary to the above, the licensee failed to establish adequate procedures to properly test the DCS following turbine logic modifications. Specifically, PMT procedures failed to identify and mitigate all turbine trip signals, which led to an automatic turbine trip resulting in an automatic reactor protective system scram actuation. Since this violation was of very low safety significance and was documented in the licensee’s corrective action program as condition report 2016-05505, it is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy (NCV 05000285/2016002-02, “Failure to Develop Adequate Procedures for Post Modification Testing”).

40A5 Other Activities

The inspectors conducted a review of Power Reactor Target Sets in accordance with Inspection Procedure 71130.14. The results of this inspection are documented in Inspection Report 05000285/2016405.

40A6 Meetings, Including Exit

Exit Meeting Summary

On May 10, 2016, the inspectors presented the target set inspection results to Mr. H. Childs, Security Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors verified that no proprietary information was retained by the inspectors or documented in Inspection Report 050002851/2016405.

On July 14, 2016, the inspectors presented the inspection results to Shane Marik, Vice President and Chief Nuclear Officer, 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.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Beck, Manager Chemistry, Environmental, and Radwaste
B. Blome, Manager, Regulatory Assurance
C. Cameron, Principal, Regulatory Specialist
J. Cate, Manager, Engineering Projects
H. Childs, Manager, Security
S. Fatora, Director, Site Work Management
B. Currier, Director, Site Engineering
R. Hugenroth, Manager, Nuclear Oversight
T. Kaplan, Director, Maintenance
T. Leaf, Director, Operations
D. Whisler, 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

A. Meyen, Physical Security Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000285/2016002-01	NCV	Failure to Perform an Adequate Evaluation of Service Life for Component Cooling Water Pump Motors (Section 40A2)
05000285/2016002-02	NCV	Failure to Develop Adequate Procedures for Post Modification Testing (Section 40A3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-31	161 kV Grid Malfunctions	14
OI-EG-3	EMS Post-FCS-Trip 161 kV Voltage Prediction and Switchyard Status	15

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-EW-1	Extreme Weather	33
NOD-QP-36	Grid Operations and Control of Switchyard at FCS	24
NPM-8.06	Nuclear Plant Interface Coordination	3
WC-AA-107	Seasonal Readiness	16

Condition Reports

2015-08823	2016-02592	2016-03361	2016-04964	2016-05187
2016-05150	2016-05240			

Work Orders

<u>Number</u>	<u>Title</u>	<u>Date</u>
0056835401	Perform OI-EW-1 for Hot Weather Preparation	June 1, 2016

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Site Certification Letter for Summer Readiness	May 6, 2016
	OPPD Nuclear Station Switchyard Readiness Certification for Summer 2016	May 1, 2016

Section 1R04: Equipment Alignment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-CC-1	Component Cooling System - Normal Operations	86
OI-CH-1	Chemical and Volume Control System Normal Operation	98
OI-SI-1	Safety Injection - Normal Operations	146
OI-VA-3	Control Room Ventilation System Normal Operation	47
SDBD-SI-HP-132	High Pressure Safety Injection	26
OI-RW-1	Raw Water System Normal Operations	109

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-4108	Control Room Air Conditioners VA-46A and VA-46B	3

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-23866-210-120, Sheet 1	Chemical and Volume Control System	80
E-23866-210-130	Safety Injection and Containment Spray System	59
11405-M-10, Sheet 1	Auxiliary Coolant Component Cooling System	36
11405-M-10, Sheet 2	Auxiliary Coolant Component Cooling System	22
11405-M-10, Sheet 3	Auxiliary Coolant Component Cooling System	26
11405-M-10, Sheet 4	Auxiliary Coolant Component Cooling System	14
10454	Raw Water System P&ID	105

Condition Reports

2014-14588	2015-02383	2015-03628	2015-05521	2015-07222
2015-07225	2015-08445	2015-13460	2015-10707	2016-03716

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
USAR 6.1	ESF General	10
USAR 6.2	Safety Injection	42
EC 48955	Install High Point Vent Valves on the Cooled HPSI Suction Lines Downstream of HCV-349 & HCV-350	0
EC 44475	HCV-2908 Packing Replacement	2
FC07054	Containment Response Study of a MSLB with Gothic	2
USAR-98	Auxiliary Systems Raw Water System	36

Section 1R05: Fire Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-06-02	Fire Emergency Uncontrolled Areas of Auxiliary Building	6
OP-AA-201-009	Control of Transient Combustible Materials	17
SO-G-28	Station Fire Plan	91
SO-G-28	Station Fire Plan	92
SO-G-102	Fire Protection Program Plan	21
AOP-06-03	Fire Emergency Miscellaneous Areas	4

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SO-G-102	Fire Protection Program Plan	22

Condition Reports

1999-00187	2007-4925	2008-4906	2011-3556	2014-13670
2014-15201	2015-01724	2015-05094	2015-05205	2015-7048
2016-03889	2016-03896	2016-03897	2016-04792	
2016-20883				

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EA-97-001	Updated Fire Hazards Analysis (UFHA)	18
	Updated Safety Analysis Report (USAR), Chapter 9.11, Fire Protection System	28
USAR 9.11	Fire Protection System	28
EA-97-001	Updated Fire Hazard Analysis	19

Section 1R06: Flood Protection Measures

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-300-150	Cable Condition Monitoring Program	2
EM-FLP-AE-0001	Inspection and Dewatering of Manholes	1
PBD-30	Cables and Connections	2

Work Orders

<u>Number</u>	<u>Title</u>
531339-01	Inspection of MH-5 and MH-31 (Duct Bank Inspection)

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
Engineering Analysis 12-015	Fort Calhoun Station Cables and Connections Program Inspection Scoping	0

Section 1R11: Licensed Operator Requalification Program

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-1	Acts of Nature	47
AOP-17	Loss of Instrument Air	16
AOP-22	Control Element Assembly and Control System Malfunctions	10a
AOP-26	Turbine Malfunctions	11
OP-ST-CEA-0003	Control Element Assembly Partial Movement Check	15
OP-2A	Plant Start-Up	126
AOP-02	CEA and Control System Malfunctions	11

Condition Reports

2014-14373	2015-03924	2015-07993	2015-07439	2016-00845
2016-02364	2016-03899	2016-05571		

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	EAL Criteria	10
	Equipment Out of Service Quantitative Risk Assessment Tool	
	Fort Calhoun Station Technical Specification, Section 3.0, Surveillance Requirements	
	Simulator Evaluation Guide: 85213	1
MA-AA-716-004	Troubleshooting log	13

Section 1R12: Maintenance Effectiveness

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	480 V Switchgear 1 B4B MCC-CA-1B	2
	480 V Switchgear 1 B3A-4A MCC-CA-1C	2

Condition Reports

2008-5710	2012-02849	2012-03128	2016-02598
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
	Electrical Distribution System - 480 V MCC A(1) Action Plan	May 19, 2016
	Maintenance Rule - Dispositioning between (a)(1) and (a)(2) ER-AA-310-1005	7
	Maintenance Rule Expert Technical Meeting	May 19, 2016
	Component Cooling Water (a)(1) Action Plan	April 28, 2016

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-ST-AFW-007	Auxiliary Feedwater Pump FW-6 Operability Test	4
OP-ST-DG-001	Diesel Generator Check	87
SO-G-123	Protected Equipment Program	9
WC-AA-101	Online Work Control Process	26
WC-AA-104	Integrated Risk Management	23
ER-AA-600	Risk Management	7
ER-AA-600-1011	Risk Management Administrative Guidance	15
ER-AA-600-1042	On-Line Risk Management	10
FCSG-19	Performing Risk Assessments	17

Condition Reports

2007-00470	2015-01290	2015-03698	2015-10095	2015-11560
2016-00354	2016-03539			

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
	Equipment Out of Service Quantitative Risk Assessment Tool	
	Updated Safety Analysis Report - Chapter 9.4, Auxiliary Feedwater	22
	Operational Decision Matrix for EHC High Particulate	June 27, 2016

Section 1R15: Operability Evaluations

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-SC-1	Shutdown Cooling Initiation	69
PED-QP-14	The Use of Engineering Judgement	
OP-FC-108-115	Operability Determination	3
MA-AA-716-230-1001	Oil Analysis Interpretation Guidelines	19
OI-DG-2	Diesel Generator No. 2	70

Condition Reports

2009-2270	2009-4906	2014-07058	2015-13216	2015-13293
2016-00147	2016-00304	2016-02765	2016-04198	2016-03901
2016-04035	2016-05646	2016-03860	2016-05208	2016-03159
2016-04319	2016-01672	2016-03419	2016-04529	2016-05006
2016-05083	2016-05181			

Work Orders

00403458	00404340	00404596	00480336	00491482
00492676				

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Apparent Cause Evaluation of Rejectable Air Void Discovered at SDC-1 during QC-ST-ECCS-0001	
	Control Room Logs	May 1, 2016
	Installation and Maintenance Instructions for Faulk Double and Single Engagement Gear Couplings TD F015.0060	2
	OPPD Oil Analysis Data Sheet Report Samples, PO# 00201594 and 00201544	
Engineering Change 58427	Fort Calhoun Station Satellite Phone Antenna Array	0
Engineering Change 68453	Shutdown Cooling Void Past Operability Report (Condition Report 2016-02765)	0
NUREG-1022	Event Report Guidelines 10 CFR 50.72 and 50.73	3

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
Report FAI/16-0470	Evaluation of Fort Calhoun Nuclear Generating Station Gas Intrusion in the Shutdown Cooling Piping	0
442968-06	Plant Barrier Impairment Permit	
RCP 3A	Adverse Condition Monitoring Plan due to Upper Seal Performance Degradation	
TS 2.7	Electrical Systems	
USAR 8.4	Electrical Systems Emergency Power Sources	19
Schulz Electric Report N-7958	Failure Analysis Report for Fort Calhoun CCWPM	0
	Large Motor Program Component Health Report	
	Inspection Manual Chapter 0326, Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety	1/31/2014
Engineering Change 68629	AC-3A-M Thermal Life (Condition Report 2016-05006)	0

Section 1R18: Plant Modifications

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CC-FC-102	Design Input and Configuration Change Impact Screening	1
OI-CH-1	Chemical and Volume Control System Normal Operation	98

Condition Reports

2016-03772 2016-03812

Work Orders

581584-04 CH-448: Cap Piping In Place of Valve per EC 68346

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
Engineering Change 68346	Removal of CH-448 and Cap	0
	50.59 Review Coversheet Form to support EC 68346	April 12, 2016

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
	50.59 Screening Form to support EC 68346	April 12, 2016

Section 1R19: Post-Maintenance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EM-PM-EX-1000	480 Volt Motor Inspection	27
MM-PM-DG-0001	Diesel Generator DG-1 Inspection	19
OP-ST-DG-0001	Diesel Generator 1 Check	87
SO-M-103	System Cleanliness	15
PED-EWP-7	Termination of Power Conductors	11
OP-ST-CCW-3002	AC-3A Component Cooling Water Pump Inservice Test	35
PED-EWP-7	Termination of Power Conductors, #8 and Larger	10a

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-2520	Chemical and Volume Control	11
E-2520	Chemical and Volume Control	12
E-23866-210-120	Chemical and Volume Control P&ID	79
E-23866-210-120	Chemical and Volume Control P&ID	80
11405-E-4	480 Volt Auxiliary Power One Line Diagram, Sheet 1	36
11405-E-144-Sh.1	480 Volt SWGR 1B3B, BKR 1B3B-4 (Unit 302D) Schematic A-C-3A	25

Condition Reports

2007-01909	2014-04199	2014-06367	2014-09010	2016-03221
2016-03609	2016-03772	2016-04659	2016-4876	2016-4866
2016-04790	2016-4960			

Work Orders

581584-04	CH-448: Cap piping in place of valve per EC 68346
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Work Orders

0053408	Task 01, AC-3B-M, Clean, Inspect and Megger Motor
0055937	DG-1: Diesel Generator 2-year Inspection
521955	DG-1: Hand Hole Cover for Cylinder 3 had 0.1 Leak
521956	DG-1: Hand Hole Cover for Cylinder 9 had 0.1 Leak
580569	DG-1: Replace #7, 11, 12, 13, 14, 15, 16, 17, 18, 19, & 20 Injectors
00581297-03	AC-3A-M: Install/Reconnect/Test Refurbish New Motor
584780-04	AC-3A: Check alignment/uncouple pump, adjust alignment if needed

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
Engineering Change 68346	Removal of CH-448 and Cap	0
	50.59 Review for EC 68346	

Section 1R20: Refueling and Other Outage Activities

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-DCS-1	Distributed Control System Normal Operation	11
OP-AA-108-114	Post Transient Review	12
OI-ST-2	Turbine Generator Startup	35
OP-2A	Plant Startup	126
AOP-26	Turbine Malfunctions	11
ARP-DCS-EHC	Turbine EHC DCS Annunciator Response	6

Condition Reports

2016-05505	2016-05506	2016-05539	2016-05561	2016-05567
2016-05586	2016-05579	2016-05578	2016-05534	2016-05622
2016-05624	2016-05616	2016-05609	2016-05615	2016-05605
2016-05578	2016-05603	2016-0557	2016-0559	2016-05592
2016-05580	2015-00424	2015-00495	2015-00743	2015-01338
2015-03671	2016-03196	2016-03253	2015-00419	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Forced Outage Schedules	
	System Post Transient Walkdown Checklists	
	Post Transient Review Report	June 22, 2016
	Operational Decision Matrix for EHC High Particulate	June 27, 2016

Section 1R22: Surveillance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-ST-CCW-3002	AC-3A Component Cooling Water Pump In-service Test	7
OP-ST-ESF-0010	Channel B Safety Injection, Containment Spray, and Recirculation Actuation Signal Test	60
OP-ST-SI-3002	Room 22 Safety Injection/Containment Spray Pumps and Valve Exercise In-service Test	18

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
B-4131	Accumulator Instrument Air Turbine for YCV-104A	7
B-4132	Accumulator Instrument Air Turbine for YCV-104B	9
11405-M-252	Steam System	61

Condition Reports

2012-16904 2016-02384 2016-04329

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Updated Safety Analysis Report, Chapter 9.4, Auxiliary Feedwater System	22
	Updated Safety Analysis Report, Chapter 4.5.6.5, In-service Inspection and In-service Testing of Pumps, Valves, and Snubbers	17
	Technical Specification 3.1, Table 3-2: Minimum Frequencies for Checks, Calibrations and Testing of Engineered Safety Features, Instrumentation and Controls	
	Technical Specification 3.6.1, Safety Injection and Containment Cooling Tests, Safety Injection System	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Updated Safety Analysis Report, Chapter 4.5.6.5, In-service Inspection of ASME Code Class 1, Class 2 and Class 3 Components	

Section 4OA1: Performance Indicator Verification

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
LS-AA-2001	Collecting and Reporting of NRC Performance Indicator Data	14
LS-AA-2003	Use of the INPO Consolidated Data Entry Database for NRC, INPO, and WANO Data Entry	10

Condition Reports

2013-2794	2015-9535	2015-9600	2015-9895	2016-0363
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Plant Logs	March 2015 through March 2016
	Raw Data for Fort Calhoun Station Power History	March 2015 through March 2016
NEI 99-02	Frequently Asked Questions 13-01, 13-02, 13-03, 13-05, 14-03, 14-09, 15-01, and 15-02	7

Section 4OA2: Identification and Resolution of Problems

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-200	Preventive Maintenance Program	2
ER-AA-200-1002	Preventive Maintenance Oversight Committee	0
WC-AA-120,	Preventive Maintenance (PM) Database Revision Requirements	2
CC-AA-309-1012	10 CFR Part 21 Technical Evaluations	3

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CC-FC-102	Design Input and Configuration Change Impact Screening	1

Condition Reports

2012-09194	2016-00381	2016-00382	2016-00478	2016-01672
2016-01857	2016-02927	2016-03159	2016-03419	2016-04319
2016-04529	2016-03159	2016-04319	2016-01672	2016-03419
2016-04529				

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Root Cause Evaluation for Condition Report 2012-09149, Recovery Engineering Discovery Subarea - Equipment Service Life	
	System Health Reports	
	Plant Health Committee Meeting Presentations	
	Maintenance Rule Committee Meeting Presentations	
N-7958-FA	Schulz Electric Report, Failure Analysis Report for Fort Calhoun CCWPM	
	Large Motor Program Component Health Report	

Section 40A3: Event Follow-Up

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-22	Control Element Assembly and Control System Malfunctions	10a
OP-ST-CEA-0003	Control Element Assembly Partial Movement Check	15
OP-AA-108-114	Post Transient Review	12

Condition Reports

2016-05505	2016-05721
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Equipment Out of Service Quantitative Risk Assessment Tool	
	Fort Calhoun Station Technical Specification, Section 3.0, Surveillance Requirements	
MA-AA-716-004	Troubleshooting log	13
50-0-1	Fort Calhoun Operating Log	0
EN 52033	Event Report	