



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 EAST LAMAR BLVD  
ARLINGTON, TEXAS 76011-4511

July 11, 2013

Louis P. Cortopassi, Vice President  
and Chief Nuclear Officer  
Omaha Public Power District  
Fort Calhoun Station FC-2-4  
P.O. Box 550  
Fort Calhoun, NE 68023-0550

**SUBJECT: FORT CALHOUN STATION – NRC IMC 0350 INSPECTION  
REPORT 05000285/2013010**

Dear Mr. Cortopassi:

On April 18, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Fort Calhoun Station. The enclosed inspection report documents the inspection results which were discussed on May 29, 2013, with Mr. S. Swanson and other members of your staff. The purpose of the inspection was to evaluate the readiness of plant operators, operations procedures, and emergency response related activities to support a safe plant restart and continued operation at the Fort Calhoun Station.

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

This inspection completed the review of the Restart Checklist Item 5.f, "Emergency Response," as discussed in the Confirmatory Action Letter dated February 26, 2013. Based on the successful completion of these inspection activities the NRC has determined this restart item is closed. The NRC determined that Restart Checklist Item 5.c, "Procedure Quality," would remain open pending future NRC follow up inspection activities focusing on site actions to address operational procedure deficiencies identified in the details of this report.

The enclosed inspection report discusses five NRC identified findings that have been determined to have low safety significance (Green). Four of these findings were determined to involve violations of NRC requirements, but did not pose any immediate safety concerns. The findings involved deficiencies with procedures, use of procedures, and extent of condition evaluations associated with previously identified procedure deficiencies. These findings are described in the enclosed report, and have been entered into your corrective action program for evaluation. These findings were assessed based on the best available information, using the applicable Significance Determination Process (SDP). The basis for the NRC's preliminary

significance determination is described in the enclosed report. The NRC is treating the four violations as non-cited violations (NCV(s)) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the finding or any of the non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Fort Calhoun Station.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC Resident Inspector at Fort Calhoun Station.

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

Sincerely,

**/RA/**

Michael Hay, Chief  
Project Branch F  
Division of Reactor Projects

Docket: 50-285  
License: DPR-40

Enclosure:  
NRC Inspection Report 05000285/2013010  
w/Attachment: Supplemental Information

cc w/ encl: Electronic Distribution for Fort Calhoun Station

ADAMS ACCESSION NUMBER: ML13192A501

ADAMS		<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> SUNSI Review Complete	Reviewer Initials: CCO
<input checked="" type="checkbox"/> Publicly Available		<input type="checkbox"/> Non-publicly Available		<input type="checkbox"/> Sensitive	<input checked="" type="checkbox"/> Non-sensitive
SOE:OB	SOE:OB	OE:OB	OE:OB	OE:OB	
COsterholtz	BLarson	TFarina	GApger	TBuchanan	
/RA/	/RA/	/RA/	/RA/	/RA/	
7/2/2013	7/1/2013	7/7/2013	7/9/2013	7/2/2013	
	C:OB	C:DRP-F			
RDevercelly	VGaddy	MHay			
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7/8/2013	7/3/2013	7/11/2013			

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 50-285

License: DPR-40

Report: 05000285/2013010

Licensee: Omaha Public Power District

Facility: Fort Calhoun Station

Location: 9610 Power Lane  
Blair, NE 68008

Dates: April 8 through May 29, 2013

Inspectors: G. Apger, Operations Engineer  
T. Buchanan, Operations Engineer  
R. Devercelly, Senior Reactor Technology Instructor  
T. Farina, Operations Engineer  
B. Larson, Senior Operations Engineer  
C. Osterholtz, Senior Operations Engineer

Approved By: Michael Hay, Chief, Project Branch F  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000285/2013010; 4/8/2013 – 5/29/2013; Fort Calhoun Station, Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input.

The report covered a two-week period of inspection by an Inspection Manual Chapter 0350 inspection team, with a focus on operations. Five Green findings were identified, four of which were considered non-cited violations of NRC requirements. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### **A. NRC-Identified Findings and Self-Revealing Findings**

Cornerstone: Initiating Events

- Green. The NRC identified a 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 establish a procedure for changing load on the Main Turbine as required by Section 2.f, "Changing Load or Load Follow." The licensee entered this into their corrective action program as Condition Report 2013-08572.

Failure to comply with technical specifications is a performance deficiency. The finding is more than minor because it adversely affects the Procedure Quality attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Initiating Events Screening Questions in Manual Chapter 0609, Appendix A, Exhibit 1, the finding was determined to not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available; therefore, the finding is of very low safety significance.

This finding was determined to have a cross-cutting aspect in the area of human performance, associated with resources, because the licensee failed to ensure that procedures are available and adequate to assure nuclear safety. Specifically, the licensee did not establish a quality procedure for changing load on the Main Turbine as recommended by Regulatory Guide 1.33, Revision 2, Appendix A [H.2(c)] (Section 4OA4).

## Cornerstone: Mitigating Systems

- Green. The NRC identified a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, for failure to correct a condition adverse to quality. Specifically, the licensee failed to identify and correct 18 alarm response procedures (ARPs) associated with a previously issued non-cited violation (NCV) for failing to comply with Technical Specification 2.3(1)(i) in that multiple safety injection tanks (SITs) were simultaneously connected for filling or sluicing operations (Condition Report 2012-01956 and 2012-04815). After identification, the licensee entered this into their corrective action program as Condition Report 2013-09711.

Failure to identify and correct a condition adverse to quality in accordance with 10 CFR 50 Appendix B, Criterion XVI is a performance deficiency. The finding is more than minor because it adversely affects the Procedure Quality attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Mitigating Systems Screening Questions in Manual Chapter 0609 Appendix A, Exhibit 2, the finding is not a deficiency that resulted in a loss of operability or functionality of a safety significant component. Therefore, the finding is of very low safety significance.

This finding was determined to have a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program, because the licensee failed to thoroughly evaluate problems such that the resolutions address the extent of conditions. Specifically, the licensee did not perform an adequate extent of condition to identify other procedures that were affected by a known operation (simultaneously filling or sluicing SITs) that received an NRC-identified violation documented in NRC Report 05000285/2012301 [P.1(c)] (Section 4OA4).

- Green. The NRC identified a non-cited violation of Technical Specification 5.8.1.a. for failure to maintain written procedures identified in Regulatory Guide 1.33, Revision 2, Appendix A. Specifically, the licensee failed to maintain Emergency Operating Procedure (EOP) –6, “Loss of All Feedwater,” and EOP-20, “Functional Recovery Procedure,” with regards to starting the Main Feedwater Pump Lube Oil Pump prior to starting the Main Feedwater Pump. This issue was previously identified in an NRC-identified NCV against an Alarm Response Procedure that did not provide guidance that the auxiliary lube oil pump must be started prior to starting the main feedwater pump (Condition Report 2012-03140). After identification, the licensee entered this into their corrective action program as Condition Report 2013-08412.

Failure to comply with technical specifications is a performance deficiency. The finding is more than minor because it adversely affects the Procedure Quality attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to

prevent undesirable consequences. Using the Mitigating Systems Screening Questions in Manual Chapter 0609, Appendix A, Exhibit 2, the finding is not a deficiency that resulted in a loss of operability or functionality of a safety significant component. Therefore, the finding is of very low safety significance.

This finding was determined to have a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program, because the licensee failed to thoroughly evaluate problems such that the resolutions address the extent of conditions. Specifically, the licensee did not perform an adequate extent of condition to identify other procedures that were affected by a known deficient procedure (ARP-CB-10, 11/A12) that received an NRC-identified violation documented in report 05000285/2012301 [P.1(c)] (Section 4OA4).

- Green. The inspectors identified a finding for the licensee's failure to follow their corrective action program procedures and perform an extent of condition evaluation. Specifically, the licensee failed to perform an extent of condition evaluation on emergency operating and abnormal operating procedures as required by procedure FCSG-24-5, "Cause Evaluation Manual" to identify other procedural deficiencies similar to those identified in non-cited violations NCV 05000285/2012301-01, NCV 05000285/2012301-04, and NCV 05000285/2012301-06.

The licensee's failure to perform an extent of condition review in accordance with FCSG-24-5 was a performance deficiency. The finding is more than minor because the failure to adequately implement corrective actions associated with identified procedural deficiencies affects the procedural quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Mitigating Systems Screening Questions in Manual Chapter 0609, Appendix A, Exhibit 2, the finding is not a deficiency that resulted in a loss of operability or functionality of a safety significant component. Therefore, the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of the problem identification and resolution associated with the corrective action program because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)] (Section 4OA4).

- Green. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.8.1.a, which resulted from workers failing to follow maintenance work control procedures. On April 1, 2012, the facility experienced a raw water pump trip and subsequent automatic start of a standby pump during a post maintenance test on a safety related bus load shed relay. This event resulted

from violations of station procedures required by Station Technical Specification 5.8.1.a., which commits the facility to Regulatory Guide 1.33, Revision 2. Specifically, Section 9 requires procedures for performing maintenance that can affect the performance of safety related equipment. The licensee documented this event in the corrective action program as Condition Report 2013-07253.

The failure to follow maintenance work control procedures was a performance deficiency. The performance deficiency is more than minor because it impacted the human performance attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. At the time of the event, the raw water system was the ultimate heat sink connection to the spent fuel pool containing a full core off-load as well as previous core load spent fuel. Using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," this finding was of very low safety significance because the event did not increase the likelihood of reactor coolant system inventory loss, did not degrade the licensee's ability to terminate a leak path or add reactor coolant system inventory when needed, and did not degrade the licensee's ability to recover decay heat removal once it was lost. The finding has a cross-cutting aspect in the area of human performance because the licensee failed to make safety-significant decisions using a systematic process to ensure safety is maintained [H.1(a)] (Section 40A5).

**B. Licensee-Identified Violations**

None



## REPORT DETAILS

The inspectors determined that only portions of the original inspection scope could be performed. The licensee had deferred over 2,000 safety-related components from their system health reviews to a separate evaluation program described as "End of Service Life" (ESL). The ESL program, initiated to evaluate the need for replacement of components that had exceeded their design service life, was still being developed at the time of the inspection. This program will be evaluated by the NRC at a date to be determined in the future. Plant conditions also preclude performing the majority of NRC Inspection Procedure 93806, "Operations Readiness Assessment Team Inspections," due to the plant being defueled and in cold shutdown. Evaluations of operations personnel readiness will be performed once the licensee initiates plant heatup and mode change evolutions.

### 4. OTHER ACTIVITIES

#### 40A4 IMC 0350 Inspection Activities (92702)

Inspectors continued the IMC 0350 inspection activities, which include follow-up on the restart checklist contained in Confirmatory Action Letter (CAL) EA-13-020 issued February 26, 2013. The purpose of this inspection was to perform an assessment of the causes of the performance decline at Fort Calhoun Station, to assess whether planned corrective actions are sufficient to address the root causes and contributing causes, to prevent their recurrence, and to verify that adequate qualitative or quantitative measures for determining the effectiveness of the corrective actions are in place. These assessments will be used by the NRC to independently determine if plant personnel, equipment and processes are ready to support the safe restart and continued safe operation of Fort Calhoun Station.

Inspectors used the criteria described in baseline and supplemental inspection procedures, various programmatic NRC inspection procedures, and IMC 0350 to assess the licensee's performance and progress in implementing its performance improvement initiatives. Inspectors performed on-site and in-office activities, which are described in more detail in the following sections of this report. This report covers inspection activities from April 8 through May 29, 2013. Specific documents reviewed during this inspection are listed in the attachment.

The following inspection scope, assessments, observations, and findings are documented by CAL restart checklist item number:

### 2 **Flood Restoration and Adequacy of Structures, Systems, and Components**

Section 2 of the Restart Checklist contains those items necessary to ensure that important structures, systems, and components affected by the flood and safety significant structures, systems, and components at Fort Calhoun Station are in appropriate condition to support safe restart and continued safe plant operation. Section 2 reviews will also include an assessment of how the licensee appropriately addressed the NRC Inspection Procedure 95003, key attributes of Procedure Quality, as described in Section 5.

## Item 2.b: System Readiness for Restart Following Extended Plant Shutdown

Systems that have been shut down for prolonged periods may be subject to different environments than those experienced during power operations. The NRC will evaluate the effects of the extended shutdown, and ensure that the structures, systems, and components are ready for plant restart and they conform to the appropriate licensing and design bases requirements.

### .1 System Health Reviews

#### (1) Inspection Scope

The team assessed licensee progress towards preparing the following systems for startup: the chemical and volume control system, control rod drive system, main feedwater system, steam generator system, instrument air system, engineered safeguards system, and reactor protection system. The team excluded system components that were beyond their end of service life (ESL) because the licensee's ESL program was not ready for review at the time of this inspection (CL Items 2.b.1.5; 2.b.1.9; 2.b.1.15, 2.b.1.17, 2.b.1.19, 2.b.1.23, 2.b.1.26).

#### (2) Observations and Findings

The inspectors reviewed the system health readiness reports for the selected systems and discussed the status with licensee representatives from engineering and operations. The inspectors noted that over 2,000 components associated with systems required for plant startup were beyond their ESL. The inspectors considered the evaluation of these components to be the most significant challenge to ready plant systems for mode change and plant startup. The inspectors performed partial system walkdowns and reviewed open and closed condition reports, open and closed work orders, and planned post maintenance testing pending system operational conditions to support. Several minor material issues were discovered and documented by the systems engineers during the partial system walkdowns.

#### (3) Assessment Results

In general, the systems cannot be cleared for startup pending independent NRC assessment of ESL issues associated with system components. Once ESL methodology is assessed as acceptable, most systems (with some exceptions) appear to be close to being acceptable for startup as long as scheduled work occurs as planned. Changes to that scheduled work may affect the final outcome. All systems will need to be walked down once plant heatup commences. The inspection team determined that the following inspection activities will still need to be performed when ready:

- Chemical and Volume Control System
  - ESL methodology evaluation, review of post maintenance testing; verification of work order and engineering change completion dates; system walkdown during plant heatup
- Control Rod Drive System
  - Review of post maintenance testing; verification of work order and engineering change completion dates; system walkdown during plant heatup
- Main Feedwater System
  - ESL methodology evaluation, review of post maintenance testing; verification of work order and engineering change completion dates; system walkdown during plant heatup
- Steam Generator System
  - ESL methodology evaluation; review of the steam generator system operational assessment; review of main steam bypass valve HCV-1042C work; review of post maintenance testing; system walkdown during plant heatup
- Instrument Air System
  - ESL methodology evaluation; system walkdown during plant heatup
- Engineered Safeguards System
  - ESL methodology evaluation; system walkdown during plant heatup
- Reactor Protection System
  - ESL methodology evaluation; system walkdown during plant heatup

## **5 Assessment of NRC Inspection Procedure 95003 Key Attributes**

Section 5 of the Restart Checklist is provided to assess the key attributes of NRC Inspection Procedure 95003. The key attributes are listed as separate subsections below. It is intended that the activities in these subsections be conducted in conjunction with reviews and inspections for Sections 1 – 4, rather than a stand-alone review. In addition, the NRC will review the effectiveness of licensee short-term and long-term corrective actions associated with these areas to ensure they are adequate to support sustained plant performance improvement.

### **Item 5.c: Procedure Quality**

Inadequate procedures can cause initiating events by inducing plant personnel to take inappropriate actions during plant operations, maintenance, calibration, testing, or event response. Adequate procedures also assure proper functioning of mitigating systems

during operation, maintenance, and testing. Emergency and abnormal operating procedures are also essential for mitigating system performance and assuring appropriate actions will be taken to preserve reactor coolant system (RCS) and containment integrity.

The site performed an integrated assessment and identified 15 fundamental performance deficiencies that resulted in the overall performance decline at the station. One of the deficiencies identified was "Procedure Quality/Procedure Management." Examples in this area included inaccurate or incomplete procedures have contributed to multiple significant events; some emergency and abnormal operating procedures are technically inaccurate; discrepancies occur within and between procedures; verification and validation of station procedures is not always rigorous; and the procedure maintenance group suffers from lack of funding, training, personnel resources, and management support.

The NRC evaluated the thoroughness of the licensee's Procedure Quality/Procedure Management evaluation, adequacy of extent of condition and extent of causal analysis, and adequacy of associated corrective actions.

.1 Licensee Assessment of the Fundamental Performance Deficiency of Procedure Quality/Procedure Management

The Root Cause Analysis Report identified the Problem Statement as "Weaknesses in the quality of some station procedures have contributed to stations events. Shortcomings in the design and implementation of the processes used to maintain station procedures contribute to this problem," with a Root Cause of "Station Management has not provided sufficient guidance, goals, oversight or effective resource management to ensure procedures meet regulatory requirements and industry standards."

The report identified multiple significant events at Fort Calhoun that were a direct result of incomplete and inaccurate procedures. It also identified multiple outside agencies, such as the NRC, INPO, Pressurized Water Reactor Owners Group (PWROG), and contractors, have historically identified that FCS procedures and procedure processes are deficient and below industry standards. Overall, the events identified, combined with findings from outside agencies, clearly demonstrate that significant work is needed in the area of plant procedures.

(1) Inspection Scope

The inspectors evaluated the thoroughness of the licensee's Procedure Quality/Procedure Management evaluation. The inspectors conducted a review of the status of operations department procedures, including Emergency Operating Procedures (EOPs), Abnormal Operating Procedures (AOPs), Operating Procedures (OPs), Alarm Response Procedures (ARPs) and Operating Instructions (OIs).

In addition, the inspectors also reviewed several internal and external assessments conducted for Operations Department procedures, condition reports, root cause analyses and apparent cause analyses. These reviews were conducted to provide the inspection team an insight into the current quality of operations procedures as well as the anticipated quality of procedures required to support restart of the unit.

## (2) Observations and Findings

### Failure to Establish Main Turbine Load Change Procedure

Introduction: The inspectors identified a green 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 establish a procedure for changing load on the Main Turbine as required by Section 2.f, "Changing Load or Load Follow."

Description: During the inspection, the inspectors identified that a procedure did not exist for changing load on the Main Turbine. After identification, the licensee entered the deficiency into their corrective action program as Condition Report 2013-08572.

In addition to the above, the inspectors also identified that significant deficiencies identified by the PWR Owners Group EOP Assessment, conducted July 23-27, 2012, had not been corrected and were not scheduled to be completed prior to restart. These deficiencies included:

- 7 technical errors identified in multiple operating procedures
- 59 negative observations
- No review of unassessed EOPs for similar deficiencies

Inspectors also identified that an internal systematic review of emergency operating procedures (EOPs) and abnormal operating procedures (AOPs) conducted as a result of the 2011 FCS INPO Evaluation Area for Improvement was completed 6 months prior to the PWR Owners Group assessment. Despite the internal systematic review, the PWR Owners Group assessment yielded negative results.

The inspectors identified that only five operations procedures were coded for restart, none of which were EOPs/AOPs. The inspectors also identified that there were several examples of less than adequate extent of condition evaluations regarding procedures.

Analysis: Failure to comply with technical specifications is a performance deficiency. The finding is more than minor because it adversely affects the Procedure Quality attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Initiating Events Screening Questions in Manual Chapter 0609 Appendix A, Exhibit 1, the finding was determined to not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or

functions would not be available; therefore, the finding is of very low safety significance.

This finding was determined to have a cross-cutting aspect in the area of human performance, associated with resources, because the licensee failed to ensure that procedures are available and adequate to assure nuclear safety. Specifically, the licensee did not establish a quality procedure for changing load on the Main Turbine as recommended by Regulatory Guide 1.33, Revision 2, Appendix A [H.2(c)].

Enforcement: Station Technical Specification 5.8.1.a requires that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Section 2 of Regulatory Guide 1.33 requires that General Plant Operating Procedures be established, implemented, and maintained for "Changing Load or Load Follow (if applicable)." Contrary to the above, the licensee failed to establish an Operating Procedure for changing load on the Main Turbine. Because this violation is of very low safety significance and was documented in the licensee's corrective action program as Condition Report 2013-08572, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000285/2013010-01, "Failure to Establish Main Turbine Load Change Procedure."

### (3) Assessment Results

Overall, the inspection team concluded that the status of procedures used by Operations was not of sufficient quality to support closure of this area. The team concluded that actions identified to improve the quality of Operations procedures prior to restart were not adequate. As a result, this checklist item will remain open until the NRC understands the station's plan to:

- 1) evaluate known deficiencies in Operations procedures and make corrections commensurate with their safety significance, and
- 2) identify efforts to be taken prior to restart to gain assurance that Operations procedures are adequate.

### .2 Adequacy of extent of condition and extent of causes

#### (1) Inspection Scope

The inspectors evaluated the thoroughness of the licensee's Procedure Quality/Procedure Management evaluation, adequacy of extent of condition and extent of causal analysis, and adequacy of associated corrective actions.

## (2) Observations and Findings

### .1 Failure to Correct Multiple Alarm Response Procedures

Introduction: The inspectors identified a green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, for failure to correct a condition adverse to quality. Specifically, the licensee failed to identify and correct 18 alarm response procedures (ARPs) associated with a previously issued non-cited violation (NCV) for failing to comply with Technical Specification 2.3(1)(i) in that multiple safety injection tanks (SITs) were connected together simultaneously for filling or sluicing operations (Condition Report 2012-01956 and 2012-04815).

Description: The inspectors reviewed the violations identified in NRC inspection report 05000285/2012301 to determine the adequacy of the licensee's extent of condition and corrective actions for those violations. In order to ascertain the licensee's effectiveness, the inspectors used the simulator to walk through a number of evolutions randomly chosen by the inspectors.

During one of the evolutions, the inspectors observed the simulator operator lower water level in one SIT until the low level alarm was received. A licensed operator was then instructed to follow station procedures to respond to the alarm. The operator used the ARP which directed him to sluice the SIT using the SIT Operating Instruction (OI) to raise water level. However, due to a violation issued in NRC Inspection Report 05000285/2012301 (NCV 2012301-03), the licensee had removed the sluicing steps from the OI. Therefore, the ARP that addressed SIT low level was not usable. The licensee's extent of condition review to correct the issues raised by the NRC had failed to identify that 18 other procedures should also have been identified and corrected. After identification, the licensee entered this into their corrective action program as Condition Report 2013-09711.

Analysis: Failure to perform an adequate extent of condition review in accordance with FCSG-24-5, Cause Evaluation Manual, is a performance deficiency. The finding is more than minor because it affects the Procedure Quality attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Mitigating Systems Screening Questions in Manual Chapter 0609, Appendix A, Exhibit 2, the finding is not a deficiency that resulted in a loss of operability or functionality of a safety significant component. Therefore, the finding is of very low safety significance.

This finding was determined to have a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program, because the licensee failed to thoroughly evaluate problems such that the resolutions address the extent of conditions. Specifically, the licensee did not perform an adequate extent of condition to identify other procedures that were affected by a known operation (simultaneously filling or sluicing SITs) that received an NRC-identified violation documented in NRC Inspection Report 05000285/2012301 [P.1(c)].

Enforcement: 10 CFR 50 Appendix B, Criterion XVI, states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, following identification of an NRC finding in April 2012 and a non-cited violation documented in NRC Inspection Report 05000285/2012301, the licensee failed to establish measures to assure a condition adverse to quality was promptly identified and corrected. Specifically, the licensee failed to perform an adequate extent of condition review of related quality procedures associated with SIT operation to promptly identify and correct deficiencies.

Because this finding was of very low safety significance (Green), and has been entered into the licensee's corrective action program as Condition Report 2013-09711, this violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000285/2013010-02; "Failure to Correct Multiple Alarm Response Procedures Related to SIT Operation."

## .2 Failure to Maintain Emergency Operating Procedures

Introduction: The inspectors identified a green non-cited violation of Technical Specification 5.8.1.a for failure to maintain written procedures identified in Regulatory Guide 1.33, Revision 2, Appendix A . Specifically, the licensee failed to maintain Emergency Operating Procedure (EOP) –6, Loss of All Feedwater, and EOP-20, Functional Recovery Procedure, with regards to starting the Main Feedwater Pump Lube Oil Pump prior to starting the Main Feedwater Pump. This issue was previously identified in an NRC-identified NCV against an alarm response procedure that did not provide guidance that the auxiliary lube oil pump must be started prior to starting the main feedwater pump (Condition Report 2012-03140).

Description: Fort Calhoun Station Guideline, FCSG-24-5, "Cause Evaluation Manual", discusses the requirements for performance of an extent of condition evaluation. FCSG-24-5, Attachment 1, Section 4.2.2, states, "The Extent of Condition evaluation considers if the actual condition or problem exists elsewhere and could (or has) result(ed) in a repeat or similar event." Section 4.3.7.H.1 states, "Extent of Condition review focuses on the actual condition and its existence in other places. Reviews must not be limited to simple reviews for previously identified conditions. Extent of Condition evaluations includes positive determination...as to the manifestation of the condition beyond the presently identified condition."

On April 20, 2012, the licensee wrote Condition Report 2012-03140 to document that several Annunciator Response Procedures (ARPs) had been identified with procedural deficiencies by the NRC. Condition Report 2012-03140-004 documented that ARP-CB-10,11/12 Windows A6-U, A6-L and B6-U for a main feed pump trip does not provide guidance that the auxiliary lube oil pump must be started prior to starting the main feedwater pump. The licensee performed an Apparent Cause Analysis (ACA) (CR 2012-03140-010) that was closed on August 9, 2012. The ACA



Corrective Action Plan did not include a corrective action to review EOPs to determine if the actual condition exists elsewhere and result in a repeat or similar event. After identification, the licensee entered this into their corrective action program as Condition Report 2013-09711.

Analysis: Failure to comply with technical specifications and maintain adequate procedures is a performance deficiency. The finding is more than minor because it adversely affects the Procedure Quality attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Mitigating Systems Screening Questions in Manual Chapter 0609 Appendix A, Exhibit 2, the finding is not a deficiency that resulted in a loss of operability or functionality of a safety significant component. Therefore, the finding is of very low safety significance.

This finding was determined to have a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program, because the licensee failed to thoroughly evaluate problems such that the resolutions address the extent of conditions. Specifically, the licensee did not perform an adequate extent of condition to identify other procedures that were affected by a known deficient procedure (ARP-CB-10,11/12) that received an NRC-identified violation documented in report 05000285/2012301 [P.1(c)].

Enforcement: Station Technical Specification 5.8.1.a requires that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Section 6 of Regulatory Guide 1.33 requires that procedures for combating emergencies and other significant events be established, implemented, and maintained. Contrary to the above, the licensee failed to establish, implement, and maintain procedures for combating emergencies and other significant events. Specifically, the licensee failed to maintain EOP-6, "Loss of All Feedwater," and EOP-20, "Functional Recover Procedure," which were procedures required to combat emergencies. Because this violation is of very low safety significance and was documented in the licensee's corrective action program as Condition Report 2013-08412, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000285/2013010 -03, "Failure to Maintain Emergency Operating Procedures."

### (3) Assessment Results

The team concluded the licensee failed to perform an adequate extent of condition evaluation for the Root Cause Analysis performed for Condition Report 2012-03140. In addition, the licensee failed to perform an adequate extent of condition evaluation for NCV 2012301-03. Therefore, this item will remain open pending a future inspection of any revisions to apparent cause analyses and any associated corrective actions that the licensee performed or plans to perform.

.3 Adequacy of corrective actions

.1 Follow-up of NCV's 2012301-01, 04, and 06, Issued for Procedural Deficiencies Identified During Initial Examination Administration

(1) Inspection Scope

The inspectors reviewed non-cited violations NCV 2012301-01, NCV 2012301-04, and NCV 2012301-06 as part of the overall assessment of the procedural quality attribute. The inspectors reviewed condition reports associated with these violations and procedural changes incorporated as a result of these violations.

(2) Observations and Findings

Failure to Perform Extent of Condition Evaluation

Introduction. The inspectors identified a finding for the failure of the licensee to follow their corrective action program procedures to perform an extent of condition evaluation. Specifically, the licensee failed to perform an extent of condition evaluation on emergency operating and abnormal operating procedures as required by procedure FCSG-24-5, "Cause Evaluation Manual" to identify other procedural deficiencies similar to those identified in non-cited violations NCV 2012301-01, NCV 2012301-04, and NCV 2012301-06.

Description. Fort Calhoun Station Guideline, FCSG-24-5, "Cause Evaluation Manual", discusses the requirements for performance of an extent of condition evaluation. FCSG-24-5, Attachment 1, Section 4.2.2 states "The Extent of Condition evaluation considers if the actual condition or problem exists elsewhere and could (or has) result(ed) in a repeat or similar event." Section 4.3.7.H.1 states, "Extent of Condition review focuses on the actual condition and its existence in other places. Reviews must not be limited to simple reviews for previously identified conditions. Extent of Condition evaluations include positive determination...as to the manifestation of the condition beyond the presently identified condition."

On June 6, 2012, the licensee wrote Condition Report 2012-04984 to document a negative trend in operation procedures based on the multiple examples of procedural deficiencies documented in non-cited violations NCV 2012301-01, NCV 2012301-04, and NCV 2012301-06. The licensee then closed this condition report to another condition report, Condition Report 2011-3016, which documented an area for improvement associated with operations' procedural quality. Condition Report 2011-3016 contained action items to perform extent of condition reviews on operating instructions, operations procedures, emergency operating procedures, and abnormal operating procedures. The extent of condition reviews for the emergency and abnormal operating procedures were completed on January 10, 2012, five months before Condition Report 2012-4984 was written. Therefore, an extent of condition review was not performed for the emergency and abnormal operating

procedures based on the actual condition as documented in Condition Report 2012-4984 and as required by FCSG-24-5.

Analysis. The licensee's failure to perform an extent of condition review in accordance with FCSG-24-5 was a performance deficiency. The finding is more than minor because the failure to adequately implement corrective actions associated with identified procedural deficiencies affects the procedural quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Mitigating Systems Screening Questions in Manual Chapter 0609, Appendix A, Exhibit 2, the finding is not a deficiency that resulted in a loss of operability or functionality of a safety significant component. Therefore, the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of the problem identification and resolution associated with the corrective action program because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity (P.1(d)).

Enforcement. This finding does not involve enforcement action because no violation of a regulatory requirement was identified. Because this finding does not involve a violation and has very low safety significance, it is identified as FIN 05000285/2013010-04, "Failure to Perform Extent of Condition Evaluation."

### (3) Assessment Results

Condition Report 2012-03140 was written to encompass all of the examples of procedural deficiencies in the alarm response procedures that were identified in non-cited violations NCV 2012301-01, NCV 012301-04, and NCV 2012301-06. One of the action items for this condition report was to perform an apparent cause analysis, which determined that the apparent cause was a lack of sufficient guidance in the FCSG-9, "Operating Procedure, Operating Instruction, and Annunciator Response Procedure Writer's Guide." The corrective action was to benchmark this procedure with the industry and make any necessary changes. The benchmarking was completed on September 8, 2012, and the licensee determined that no changes were needed. A revised apparent cause analysis is in progress, but was not complete as of the end of this inspection. Each of the three non-cited violations contains at least one example of an alarm response procedural deficiency. Therefore, although the specific procedural deficiencies documented in the non-cited violations have been corrected, this item will remain open pending a future inspection of the revised apparent cause analysis and any associated corrective actions.

.2 Follow-up of NCV 2011002-001, Inadequate Operating Instruction Results in a Loss of Auxiliary Feedwater

(1) Inspection Scope

The team reviewed the licensee's assessment of NCV 2011002-01, "Inadequate Operating Instruction Results in a Loss of Auxiliary Feedwater." This assessment was performed by way of Condition Report 2011-0839 and its associated Root Cause Analysis.

The problem statement identified by the licensee was: "*Determine why, when performing OI AFW-4, Auxiliary Feedwater Startup and System Operation, operations repositioned safety significant components (HCV-1107A/B) which rendered the system inoperable in modes where operability is required.*" The identification of the mispositioned valves in this statement is inaccurate; it was actually valves HCV-1107A and HCV-1108A which were affected. This appears to be a typographical error, as the rest of the causal analysis accurately evaluates the actual mispositioned valves.

The team's assessment of this RCA was informed by the evaluation criteria from Section 02.02 of NRC Inspection Procedure 95001 which align with this item. The inspection objectives were to:

- Verify that the licensee has performed adequate casual analysis and extent of condition evaluations related to the deficient procedural guidance
- Verify that adequate corrective actions were identified associated with the causes and extent of condition evaluations and that implementation of these corrective actions are either implemented or appropriately scheduled for implementation

(2) Observations and Findings

- a. *Determine that the problem was evaluated using a systematic methodology to identify the root and contributing causes.*

The team determined that the licensee evaluated this problem using a systematic methodology to identify the root and contributing causes. The licensee chose to perform an Event and Causal Factors Analysis (ECFA) to evaluate the root and contributing causes which led to this violation, as well as performed document reviews and interviews. FCSG-24-5, "Cause Evaluation Manual," states that ECFA is a method for evaluating operating events, human performance issues, equipment and programmatic issues. The performance deficiency which led to this causal analysis contained elements of both an operating event and human performance issues.

The licensee identified the following root and contributing causes:

*8.1 Root Cause: Technical reviews performed on OI-AFW-4 were incomplete in their consideration of how plant mode changes affected auxiliary feedwater safety system status.*

*8.2 Contributing Cause: Insufficient criteria to ensure periodic Verification and Validation of infrequently used procedures or procedure sections.*

*8.3 Contributing Cause: Infrequent monitoring or critical observation of Control Room Oversight role has led to weak or inconsistent reinforcement of performance standards.*

*8.4 Contributing Cause: Risk management through Questioning Attitude: Significant Event Triggers not applied per FCSG-7 to help identify potential performance risks.*

*8.5 Contributing Cause: OPD 3-09 does not establish adequate competence level to control assignment of personnel to perform peer checks.*

The team determined that these root and contributing causes reasonably captured the factors that led to performance deficiency, specifically the mispositioning of safety-related valves HCV-1107A/-1108A which caused a violation of Technical Specification 2.5(1)D.

- b. *Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.*

The team determined that the RCA was conducted to a level of detail commensurate with the significance of the problem. Specifically, as noted above, the licensee performed an Event and Causal Factors Analysis, conducted interviews, reviewed documents, operating experience, and safety culture. Also evaluated were the impacts of human performance issues, administrative and programmatic issues, management and supervisory oversight, and equipment.

- c. *Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.*

The team determined that the RCA included a consideration of prior occurrences and prior operating experience. No prior occurrences of this specific problem were identified. External and internal operating experience were reviewed and contributed to the development of the root and contributing causes.

- d. *Determine that the root cause evaluation addressed the extent of condition and the extent of cause of the problem.*

The team determined that the RCA did address the extent of condition and extent of cause of the problem. The extent of condition evaluated all procedures which could

affect the positioning of HCV-1107A/-1108A, and recommended a review of procedures for other safety-related systems which could be at risk for misalignment due to poor procedure content or misinterpretation. It also identified that other procedures related to the operation of safety-related equipment during plant mode changes may not have been adequately reviewed to ensure that Technical Specification operability requirements were addressed at critical steps in the procedure, and recommended a review of these. These additional reviews were performed in the corrective actions.

- e. *Determine that the root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0310.*

The team determined that the RCA did appropriately consider the safety culture components as described in IMC 0310. Specifically, the licensee identified that the following cross-cutting aspects were applicable to this event:

(H.2.c): Complete, accurate and up-to-date design documentation, procedures, and work packages, and correct labeling of components;

(H.4.a): The licensee communicates human error prevention techniques, such as holding pre-job briefings, self and peer checking, and proper documentation of activities. These techniques are used commensurate with the risk of the assigned task, such that work activities are performed safely. Personnel are fit for duty. In addition, personnel do not proceed in the face of uncertainty or unexpected circumstances;

(H.4.c): The licensee ensures supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported.

- f. *Determine that appropriate corrective actions are specified for each root and contributing cause or that the licensee has an adequate evaluation for why no corrective actions are necessary.*

The team reviewed the corrective actions developed for each root and contributing cause, as well as for the extent of condition and extent of cause - 12 in total. The corrective actions which were developed were all determined to be appropriate in themselves; however, one contributing cause identified in the RCA did not have an adequate corrective action developed for it. Specifically, Contributing Cause 8.2, *“Insufficient criteria to ensure periodic Verification and Validation of infrequently used procedures or procedure sections,”* was inadequately addressed. The corrective actions which the licensee developed to correct this cause addressed shortcomings in the Biennial procedure review guidance, but did not actually address the Validation and Verification (V&V) process. Validation and Verification is part of the procedure change process and evaluates new or changed procedure adequacy by simulation, walkdown, table-top exercise, or similar means to ensure a procedure is useable, compatible with actual plant configuration, appropriate for the end-user, and will function as intended. The exercises approximate actual task performance as close as

possible. The biennial review process is more of an administrative review performed every two years on event-driven procedures (EOPs/AOPs/ARPs), and may be exempted if the procedure was used in its entirety or received a major revision in the last two years.

The team determined that Contributing Cause 8.2 was appropriate in identifying that a Verification and Validation of procedure OI AFW-4, "AFW Startup and System Operation," could have identified the shortcomings in the guidance and prevented the performance deficiency. The section of the procedure which was deficient (Att 3 – Feeding with Electric-Driven AFW Pump FW-6 via Aux Feed Nozzles) had not been actually used for startup activities for at least six years and had not received a V&V review since at least 2002 (V&V is triggered by changes, not regularly scheduled). Biennial reviews had been performed on OI AFW-4 in recent years, but failed to identify the procedure content problem. The corrective actions the licensee developed only required changes to the biennial review process; however, no mention was made of V&V.

The team recommends that this NCV remain open until a corrective action for Contributing Cause 8.2 is developed and implemented. The licensee has initiated Condition Report 2013-08677 to address this issue.

- g. *Determine that a schedule has been established for implementing and completing the corrective actions.*

The team reviewed the status of implementing and completing corrective actions for this issue, and determined that an adequate schedule was established. At the time of the inspection, all action items in the condition report had been completed with the exception of an effectiveness review, the last step. It is expected however that additional action items will be added to the condition report to address Contributing Cause 8.2, discussed above.

- h. *Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.*

The team determined that the licensee developed a quantitative measure of success to determine the effectiveness of the corrective actions. The licensee at the time of this inspection was in the process of administering Job Performance Measures to licensed operators in requalification training, testing their ability to accomplish the revised portions of the affected procedures. The licensee established a 100 percent pass rate with 0 instances of Technical Specification violations as their measure of effectiveness.

### (3) Assessment Results

The team concluded for Root Cause Analysis 2011-0839 that the licensee performed adequate casual analysis and extents of condition and cause evaluations related to the deficient procedural guidance. Adequate corrective actions were identified

associated with the causes and extents of condition and cause evaluations, with the exception of Contributing Cause 8.2 for which an adequate corrective action was not developed. Implementation of these corrective actions are either complete or appropriately scheduled for implementation.

This NCV will remain open on the restart checklist pending development and implementation of a corrective action for Contributing Cause 8.2, "Insufficient criteria to ensure periodic Verification and Validation of infrequently used procedures or procedure sections."

#### Item 5.f: Emergency Response

##### (1) Inspection Scope

The team reviewed the licensee's assessment of the Fundamental Performance Deficiency (FPD) associated with the Emergency Response Organization (ERO). This FPD as identified by the FCS Collective Evaluation Report reads as follows:

*"The station does not effectively identify and correct emergency preparedness deficiencies as required by 10CFR50, Appendix B, Criterion 16 in that shortfalls are not recognized, evaluated and resolved in a timeframe consistent with their significance. This may ultimately challenge the station's ability to execute the Radiological Emergency Response Plan (RERP)."*

The team assessed the Apparent Cause Analysis (ACA) written to address this FPD, contained in Condition Report 2012-08128. The following programmatic and cultural deficiencies were identified as examples of this FPD:

- Longstanding equipment reliability issues impact ERO effectiveness;
- Inadequate implementation and documentation of important ERO activities;
- Emergency Planning (EP) does not effectively identify and correct deficiencies;
- EP has not performed sufficient self-assessments to improve the program;
- Weaknesses in procedure quality.

The team's assessment of this ACA was informed by the evaluation criteria from Section 02.02 of NRC Inspection Procedure 95001 which align with this item. The inspection objectives were to:

- Verify that the licensee has performed adequate casual analysis, extent of condition, and extent of cause evaluations related to the Emergency Response Organization Fundamental Performance Deficiency.
- Verify that adequate corrective actions were identified associated with the causes and extent of condition evaluations and that implementation of these corrective actions are either implemented or appropriately scheduled for implementation. (CL Items 5.f.7; 5.f.8; 5.f.9)



(2) Observations and Findings

- a. *Determine that the problem was evaluated using a systematic methodology to identify the root and contributing causes.*

The team determined that the licensee evaluated this problem using a systematic methodology to identify the root and contributing causes. The licensee chose to perform both an Event and Causal Factors Analysis (ECFA) and a Barrier Analysis to evaluate the root and contributing causes which led to this violation. FCSG-24-5, "Cause Evaluation Manual," states that ECFA is a method for evaluating operating events, human performance issues, equipment and programmatic issues. The FPD which led to this causal analysis contains both programmatic and human performance issues.

The licensee identified the following apparent and contributing causes:

- *Apparent Cause 1 (AC 1): Station Management has not provided sufficient guidance, oversight and accountability to ensure the emergency preparedness program meets regulatory requirements and industry standards.*
- *Contributing Cause 1 (CC 1): Long standing and recurring issues with emergency preparedness equipment reliability are not effectively tracked, trended or corrected.*
- *Contributing Cause 2 (CC 2): Performance indicators are not effectively used to focus and drive improvements.*
- *Contributing Cause 3 (CC 3): Emergency Planning Department staff has experienced instability. As a result, staff knowledge and experience has declined.*

The team determined that these apparent and contributing causes reasonably captured the factors that led to fundamental performance deficiency.

- b. *Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.*

The team determined that the ACA was conducted to a level of detail commensurate with the significance of the problem. Specifically, as noted above, the licensee performed an Event and Causal Factors Analysis and Barrier Analysis, conducted interviews, distributed surveys, reviewed documents, operating experience, and safety culture. The licensee used the cause test methodology described in FCSG-24-5, "Cause Evaluation Manual," to develop and differentiate between apparent and contributing causes.

- c. *Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.*

The team determined that the ACA included a consideration of prior occurrences and prior operating experience, using a time period of January 1, 2006, to present. The internal review identified a recurring trend in the inability to implement lasting correcting actions to equipment deficiencies and ERO performance issues. The external review identified examples of OE that document the same or similar conditions as those that have occurred at FCS. The licensee determined that none of the OE examples individually would have eliminated the condition at FCS in its entirety, but represented missed opportunities for use of operating experience and thus a failure to use OE to improve performance. External and internal operating experience reviews contributed to the development of the apparent and contributing causes.

- d. *Determine that the root cause evaluation addressed the extent of condition and the extent of cause of the problem.*

The team determined that the ACA did address the extent of condition and extent of cause of the problem. The licensee bound its extent of condition evaluation by the condition of “the station does not effectively identify and correct emergency preparedness deficiencies.” The evaluation determined that an extent of condition does exist for seven processes which are used to identify and correct problems. Each of these processes is being evaluated separately with its own root cause analysis in response to the overall FCS Collective Evaluation. The licensee also identified that an extent of cause exists in the Security Department, site-wide procedure quality, site-wide staff knowledge / experience, and site-wide accountability. As with the extent of condition evaluation, each of these affected areas is being evaluated with its own root cause analysis.

- e. *Determine that the root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0310.*

The team determined that the ACA did appropriately consider the safety culture components as described in IMC 0310. Specifically, the licensee identified that the following cross-cutting aspects were applicable to this FPD:

- Human Performance: Decision-making [H.1 (a)]
- Human Performance: Resources [H.2 (a); H.2(d)]
- Human Performance: Work Control [H.3(a); H.3(b)]
- Human Performance: Work Practices [H.4(b); H.4(c)]
- Problem Identification and Resolution: Corrective Action Program [P.1(a); P.1(b); P.1(c); P.1(d)]
- Problem Identification and Resolution: Operating experience [P.2(b)]
- Problem Identification and Resolution: Self- and Independent Assessments [P.3(a); P.3(b)]
- Other Components: Accountability [O1]

- Other Components: Continuous learning environment [O2]
- Other Components: Organizational change management [O3]

- f. *Determine that appropriate corrective actions are specified for each root and contributing cause or that the licensee has an adequate evaluation for why no corrective actions are necessary.*

The team reviewed the corrective actions developed for each root and contributing cause, as well as for the extent of condition and extent of cause – 11 in total. The corrective actions which were developed were all determined to be appropriate for the identified apparent and contributing causes.

- g. *Determine that a schedule has been established for implementing and completing the corrective actions.*

The team reviewed the status of implementing and completing corrective actions for this issue, and determined that an adequate schedule was established. At the time of the inspection, 8 of the 11 corrective actions recommended by that ACA had been implemented and closed in Condition Report 2012-08128, and the remaining 3 were in progress.

- h. *Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.*

The team found that because the Emergency Response Organization FPD was evaluated through an apparent cause analysis, an effectiveness review was not required to be developed because there was not a corrective action to prevent recurrence (CAPR). The team found that this is consistent with Procedure FCSG 24-4, "Condition Report and Cause Evaluation", Revision 6a, which states, "Effectiveness reviews are not required for apparent cause evaluations." That notwithstanding, the nature of several of the corrective actions are such that the performance of the Emergency Response Organization will receive more frequent review from higher levels of management on a regular basis, particularly through the improvements made to the Emergency Preparedness Advisory Committee charter.

### (3) Assessment Results

The team concluded that for Apparent Cause Analysis 2012-08128: the licensee performed adequate casual analysis and extents of condition and cause evaluations related to the Emergency Response Organization Fundamental Performance Deficiency. Adequate corrective actions were identified associated with the causes and extents of condition and cause evaluations. Implementation of these corrective actions is either complete or appropriately scheduled. Therefore, restart checklist items 5.f.7, 5.f.8, and 5.f.9 are closed.

## 7 **Readiness for Restart**

After long periods in a shutdown condition, particularly where significant performance issues were also identified, a performance-based and risk-informed inspection should be conducted by the NRC. The NRC performs such inspections using Operational Readiness Assessment Team inspections, under the guidance of Inspection Procedure 93806, "Operational Readiness Assessment Team Inspections." The NRC plans to perform an operational readiness inspection during plant heat up prior to start up to assess operational performance.

### Item 7.a: Operations Organization Ready for Restart

#### .2-4: Licensee Assessment of the Fundamental Performance Deficiency associated with Site Operational Focus; Adequacy of Extent of Condition and Extent of Causes; and Adequacy of Corrective Actions

##### (1) Inspection Scope

The inspectors reviewed Confirmatory Action Letter, items 7.a.2, 3, and 4 as described in Condition Report CR-2012-08132, which specifically stated, "Personnel at all levels do not understand nor embrace the roles they play in maintaining a strong operationally focused team." The inspection included a review of numerous station documents including but not limited to, Condition Report CR-2012-08132 and the associated root cause analysis, "The OPPD Corporate Governance, Oversight, Support and Perform Policy," "The Operations Excellence Plan," "The Corrective Action Program Procedures (FCSG-24 Series)," the Operations Department Performance Indicators, and several operability evaluations related to ESL components. In addition, horizontal and vertical slice interviews were conducted with 37 station personnel ranging from the plant manager to craft personnel. Those interviewed included long term as well as recently hired employees. The interviews included representatives of:

- Station Leadership (4)
- Operations Staff (2)
- Operations Shift Staff (18)
- The Initial License Operator Class (3)
- Systems Engineering (2)
- Instrument and Controls (3)
- Mechanical Maintenance (2)
- Electrical Maintenance (3)

The interview path was driven by responses to the following:

- Describe an Operations Led Organization.
- How was this change communicated?
- Describe FCS as it was before this expectation and as it is now.
- How is this change sustainable?
- What is the purpose of the Corrective Action Program?
- How do you respond to the unknown or unexpected?

## (2) Observations and Findings

A review of condition report CR-2012-08132, and its associated root cause, document that the issue has a site wide extent of condition and the corrective actions address a site wide change in expectations. OPPD is adopting the Exelon Corporation management model and the changes to date reflect appropriate focus on improving the nuclear safety culture, transitioning to an operational focus for the site, and procedural improvements to the corrective action program. Selected closed corrective actions have been completed as described. Selected corrective actions that remain open and the use of applicable performance indicators indicate an effective plan for sustainability of an improved focus on nuclear safety culture as an operations led organization.

### Interview Results and Themes

- The communication has been received and is embraced by all levels of the organization
- There is much confidence in the Exelon Model/Management
- There is high confidence that FCS will operate safely
- The site has pride in recent significant improvements in plant safety and human performance
- Departments outside of operations see themselves as a support organization and the only customer is operations
- There is consistent belief in the use and value of the corrective action program
- Fort Calhoun Station is on the right track with an upward slope
- Good enough is no longer good enough

- The craft levels of the organization do not appear to recognize that this change message originates from the OPPD Corporate level (CNO)
- There are indications that the daily work schedule is still too fluid and therefore challenges operations staff to release/prepare for craft work

### (3) Assessment Results

The team concluded that there is notable improvement in that “Personnel at all levels understand and embrace the roles they play in maintaining an operationally focused team”. Although procedures are in place, the majority of the changes have occurred since Exelon leadership was put into place in late 2012. It is therefore too early to tell if the changes are sustainable. Confirmatory Action Letter Items 7.a.2, 3 and 4 will be closed pending a sustainability review.

## **4OA5 IMC 350 Inspection Activities (93806)**

The objective of procedure 93806 is to provide guidance on conducting Operations Readiness Assessment Team (ORAT) inspections for new plants and restarting after extended outages. Results from these inspections will provide a major input for NRC decisions regarding plant operational readiness.

## **02.02 Plant Inspection**

### Item 02.02d: Self Assessment Capability

#### (1) Inspection Scope

The inspectors examined the licensee's self-assessment capability as it relates to readiness for operation, including the effectiveness of root cause analyses, corrective actions, and the trending and generic applicability review of self-identified problems. The inspectors reviewed the adequacy of the deficiency reporting system, including thresholds, and evaluate the effectiveness of prioritization of the identified problems. The inspectors assessed the involvement of Quality Assurance (QA) and engineering in problem resolution and reviewed the root cause analysis training program.

#### (2) Observations and Findings

The licensee has been effective in their ability to identify the need for self-assessments. For example, the licensee has a number of assessments, both internal and external, relating to procedure quality. One of the assessments reviewed dates to the 1990's. The conclusions of that assessment echoes the conclusions of the most recent assessments – procedure quality is poor and needs improvement.

The licensee, however, does not adequately identify the extent of condition for causal analyses and the licensee often fails to correct problems identified. For example, the Procedure Quality Fundamental Performance Deficiency Root Cause Analysis did not include operating procedures within the extent of condition; whereas, procedure quality was the cause of nineteen prior violations.

As a result, during this inspection, NRC-identified violations were either a result of failing to adequately address the extent of condition or failing to correct identified problems. For example, the inspectors identified two procedural inadequacies for Emergency Operating and Alarm Response Procedures within twenty minutes and one hour, respectively, by performing a brief extent of condition.

### (3) Assessment Results

While the licensee performs adequate self-assessments, they do not incorporate recommendations, specifically for the decades-long issue of procedural quality. Due to the significant deficiencies in identifying procedural issues observed during this inspection, inspection item 02.02.d will remain open.

### Item 02.02e: Operator Training, Challenges, and Focus Group Interviews

#### (1) Inspection Scope

The inspectors reviewed the operator challenge list, attended two sessions of operator training, and performed focus group interviews consisting of three groups with six members of the operations staff in each group.

#### (2) Observations and Findings

The inspectors noted that there were no significant items on the operator challenge list to preclude plant restart. During the training sessions observed, the inspectors noted that operators were open and willing to discuss areas for improvement, and the scenarios were of sufficient level of difficulty to be challenging to the operations staff. The inspectors also discussed the plans for “just in time” training on reactor startup with operations and operations training personnel. The training plans appeared to support operator training needs for performing a reactor and plant startup.

The inspectors noted the following themes among all three groups during the focus group interviews:

- Operators appeared confident in their abilities and the quality of their training, but expressed concerns that they don't have safe, reliable equipment and procedures to effectively operate Fort Calhoun Station
- Operators indicated that the corrective action program is improving, but on occasion there are still instances where corrective actions are untimely

- Operators indicated that they felt there was no hesitation or stigma in the raising of safety concerns
- Operators indicated that they felt that Fort Calhoun Station is operations driven now more than ever
- Operators expressed a great deal of confidence in the ability of the Exelon management team to improve Fort Calhoun performance
- Operators indicated that plant procedures are getting better, but there is still much room for improvement

### (3) Assessment Results

The inspectors considered operator training effective in preparing operators for plant startup as well as power operation. The inspectors considered Section 02.02.e. ready for closure pending control room observations of operations personnel during plant heatup and mode changes.

### Item 02.02g: Technical Specification Appraisal Process

#### (1) Inspection Scope

The inspectors observed simulator scenarios which exercised the use of technical specifications, reviewed the license amendment process, the operating experience program, and past audits of the station conformance to technical specifications. The inspectors also reviewed a sample of surveillance tests, operating instructions, abnormal operating instructions, and alarm response procedures to ensure the licensee was appropriately referencing technical specifications in procedures. The inspectors reviewed the licensee's process for ensuring technical specifications are referenced in procedures. The inspectors also reviewed administrative controls for post maintenance testing, troubleshooting, coordination of work activities, and startup procedures to ensure start-up testing is controlled within technical specification restraints and not as troubleshooting activities.

#### (2) Observations and Findings

Operators appeared knowledgeable in the use and application of technical specifications. The licensee currently has a process to review technical specifications for needed changes and to ensure that procedures are updated as necessary to reflect these changes. No issues were identified during the inspectors' review of the licensee's procedures or processes associated with use, application, or reference to technical specifications.



### (3) Assessment Results

Operator knowledge and use of technical specifications will continue to be evaluated when the station commences heat-up activities and mode changes during a future Operation Readiness Assessment Inspection.

#### Item 02.02h: Frequency and Severity of Plant Transients

##### (1) Inspection Scope

The inspectors reviewed an April 1, 2013, post maintenance testing activity in which the facility experienced a raw water pump trip and subsequent automatic start of a standby pump on a safety-related bus load shed relay.

##### (2) Observations and Findings

Introduction. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.8.1.a, which resulted from workers failing to follow maintenance work control procedures. On April 1, 2013, the facility experienced a raw water pump trip and subsequent automatic start of a standby pump during a post maintenance test on a safety-related bus load shed relay. This event resulted from violations of station procedures required by Station Technical Specification 5.8.1.a. which commits the facility to Regulatory Guide 1.33, Revision 2. Specifically Section 9 requires procedures for performing maintenance that can affect the performance of safety-related equipment.

Description. On April 1, 2013, the control room supervisor granted permission to perform Work Order WO-00452940-03 to perform a post maintenance test to conduct continuity checks on a bus load shed relay on safety-related bus 1A3. The work was originally scheduled to be performed the week of February 4, 2013, and was recommenced after several weeks of dormancy. The work order was not in the work schedule for April 1, 2013. The 1A3 safety-related bus was designated as protected equipment when the work was commenced. The jumper installation on bus load shed relay 27TIX/1A3 resulted in a load shed signal which tripped the running "C" raw water pump and prevented start of the standby "A" raw water pump. The "D" raw water pump had been removed from service for maintenance. The "B" raw water pump automatically started restoring connection of spent fuel pool cooling and component cooling water to the ultimate heat sink. This event is documented in Condition Report 2013-07253.

This event resulted from multiple procedural violations:

- Contrary to standing order SO-M-101, "Maintenance Work Control", Section 4.6, the work order was not scheduled in the Integrated Work Schedule for April 1, 2013.
- Work was authorized on protected equipment without the rigor required by standing order SO-G-123, "Protected Equipment Program". Specifically,

Step 4.4.3 of this procedure will only allow the work if considered absolutely necessary and only after a shift manager or control room supervisor pre-job brief discussing the potential for making the protected equipment inoperable or unavailable (which did not occur).

- After scheduled work activities on or about February 4, 2013, the work package became dormant and was not returned incomplete to the shift manager or work control center as required by standing order SO-M-100, "Conduct of Maintenance". Specifically, steps 5.5.5.R and S require that a work stoppage exceeding eight hours be brought to the attention of the shift manager, and that shift manager concurrence be obtained prior to restarting the task. The package was retained dormant in the electrical work area for future use.
- Contrary to standing order SO-M-101, "Maintenance Work Control", Section 4.18, the package was coded in Asset Suite as finished on March 20, 2013, without a work package review for completeness. At that time the package was not complete and was dormant in the electrical work area.
- Contrary to procedure OPD-4-16, "Operations (Work) Control Center Description", steps 1.2 and 4.3.1, craft personnel went directly to the control room for work release without first stopping at the work control center, and the control room supervisor authorized the work without first checking with work control center.
- The Pre-Job Brief Checklist of FCSG-7, "Human Performance", conducted on April 1, 2013 documented completion of checking the Integrated Work Schedule for risk sensitivity. This was not completed, as the activity was not scheduled for completion that day.
- The Pre-Job Brief Checklist of FCSG-7, "Human Performance," conducted on April 1, 2013 did not document any briefing applicable to protected equipment, which would have included bus 1A3.

Analysis. The failure to follow maintenance work control procedures was a performance deficiency. The performance deficiency is more than minor because it impacted the human performance attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. At the time of the event, the Raw Water System was the ultimate heat sink connection to the spent fuel pool containing a full core off-load as well as previous core load spent fuel. Using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," this finding was screened to Green because the event did not increase the likelihood of reactor coolant system inventory loss, did not degrade the licensee's ability to terminate a leak path or add reactor coolant system inventory when needed, and did not degrade the licensee's ability to recover decay heat removal once it was lost. The finding has a cross-cutting aspect in the area of human performance because the licensee failed to make safety-significant decisions using a systematic process to ensure safety is maintained. [H.1(a)].

Enforcement. Station Technical Specification 5.8.1.a requires that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Section 9 of Regulatory Guide 1.33 requires 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 this requirement, the licensee failed to properly preplan and perform maintenance that can affect performance of safety related equipment in accordance with written procedures. Specifically, on April 1, 2013, workers failed to properly plan and perform a post maintenance test on a safety related electrical distribution system in accordance with written procedures. Since this violation was of very low safety significance and was documented in the licensee's corrective action program as condition report CR-2013-07253, it is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000285/2013010 -05, "Failure to Follow Work Control Procedures."

### (3) Assessment Results

The inspectors concluded that the licensee was initiating appropriate corrective actions in response to the documented procedural deficiencies.

## Item 02.02I: Qualifications and Commercial Operating Experience of Key Managers and Operators

### (1) Inspection Scope

In order to assess the facility's ability to safely restart following an extended outage, the team inspected item 02.02.I from Inspection Procedure 93806, "Operations Readiness Assessment Team Inspections." The inspection objectives were to:

- Verify that the qualifications of key managers meet the requirements of Technical Specification 5.3, "Facility Staff Qualification."
- Verify that management is engaged in the implementation of operations evolutions and work controls.
- Verify that the licensee operations department is adequately staffed to conduct a plant startup and sustained operations at higher modes of operation.

### (2) Observations and Findings

- a. Review the qualifications and commercial operating experience of key managers and operators. Evaluate organizational responsibilities and interfaces that support the operating unit.*

The team chose a sample of managers and operators from the site's organizational chart, and verified that their qualifications met the applicable industry standards committed to in Technical Specification 5.3, "Facility Staff Qualification." Specifically, the team reviewed the qualifications of the following individuals: Plant Manager; Shift Operations Manager; Maintenance Manager; Chemistry Manager; Nuclear Engineering Supervisor; Electrical Maintenance Supervisor; Mechanical Maintenance Supervisor; Instrumentation and Controls Supervisor; Emergency Planning Manager; Emergency Planning Supervisor; Corrective Action Program Manager; and Radiation Protection Manager. The team also reviewed the qualifications of four licensed operators and one Shift Technical Advisor. The team did not identify any instances where the requirements of Tech Spec 5.3 were not met for the individuals reviewed. The team also reviewed the licensee's organizational charts and duties and responsibilities for the operations organization. The team determined that the organization is structured in a manner to support the operating unit.

The team did observe that the licensee's procedure for defining personal qualification requirements, NOD-QP-15, "Qualification of Nuclear Organization Personnel," contains inconsistencies which diminish its usefulness as a source document. Specifically, Attachment 1, "Minimum Experience and Training Requirements for Nuclear Personnel," lists education and experience requirements for various positions; however, the chart is unclear in places regarding the education which is required as opposed to education that is suggested but not required for a given position. The licensee wrote condition reports 2013-08739 and 2013-08135 to address this issue.

*b. Evaluate management oversight and involvement in the implementation of operations evolutions and work controls.*

The team reviewed the level of engagement and oversight provided by facility management for potentially risk-significant operations evolutions. Specifically, the team verified that management had participated in the last five pre-job briefings for infrequently performed evolutions required by SO-G-92, "Standing Order: Conduct of Infrequently Performed Procedures" (Evolutions conducted on March 5, 2013; March 1, 2013; December 6, 2012; September 18, 2012; and May 13, 2012). The team verified that management reviewed and approved the last three departures from the Shutdown Operations Protection Plan (SO-O-21 Att. 6 – Approval for Departure from the Requirements of the Shutdown Operations Protection Plan), including appropriate risk mitigation methods. The team reviewed six months of daily plant risk condition (color) from ORAM, and sampled dates with elevated risk (greater than green) to verify that the risk-increasing evolutions received control room briefs as appropriate. The team sampled a waiver of a pre-test briefing to verify that the waiver met the requirements of SO-G-92, and was approved by the appropriate level of management.

The team identified that the licensee's operations department had failed to perform annual "New Crew Briefings" required by OPD-2-05, "Annual Shift Schedule," Section 4.6. Specifically, this procedure requires that within 10 days of the implementation of the annual new crew adjustment, shift managers must hold new crew briefs emphasizing crew expectations covering Command and Control, Sensitivity to Critical and Normal Evolutions, and Questioning Attitude/Attention to Detail. Attendance sheets from these briefs are required to be retained. The facility could only provide evidence that these briefs occurred for 1 of the 6 crews after the most recent crew change approved on December 28, 2012. Additionally, the facility could not provide evidence that semi-annual key safety culture briefings led by the Operations Manager have occurred as required by OPD-2-05 Section 4.7; although, this topic was covered in Licensed Operator Requalification in January 2013. These deficiencies were captured by the licensee in Condition Report 2013-08116.

- c. *Review and assess licensee plans for augmented shift staffing during the initial plant startup. Determine whether the licensee has staffed the organization to levels which are capable of successfully operating and supporting the unit.*

The team reviewed the licensee's plans for transitioning from a normal six-crew rotation to an augmented four-crew "super-crew" schedule during plant startup. The team also reviewed the licensee's plan for accommodating the eight licensed operators with Mode-3-and-Below restrictions on their licenses, post-startup. The team verified that the licensee had developed a plan to ensure that no operator was scheduled to serve in a licensed position during a mode for which he was not licensed. The licensee confirmed that the operators restricted to Mode 3 operations would transition to an under-instruction status once Mode 2 was reached, and would not serve in a position requiring a license by technical specifications until such time as their licenses became unrestricted. The licensee's plan will require the temporary use of non-operating crew licensed operators to accommodate the unavailability of the Mode 3 restricted operators, and the activation of licensed operators who are currently inactive but current in the requalification program, as allowed by 10 CFR 55.53.(f).

### (3) Assessment Results

The team concluded that key managers generally meet the requirements of Technical Specification 5.3, "Facility Staff Qualification." The team concluded that management is engaged in the implementation of operations evolutions and work controls, and that the licensee operations department is adequately staffed to conduct a plant startup and sustained operations at higher modes. Because of this, item 02.02.1 from Inspection Procedure 93806, "Operations Readiness Assessment Team Inspections," is closed.

#### **4OA6 Meetings, Including Exit**

##### Exit Meeting Summary

On April 18, 2013, the inspectors presented the inspection results in an exit to Mr. Louis P. Cortopassi, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. On May 29, 2013, the inspectors re-exited with Mr. S. Swanson, Operations Director, and other members of your staff due to re-evaluation of one issue that was originally dispositioned as a noncited violation, but later determined to be a finding and not a violation of regulatory requirements.

The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. All proprietary information retained by the inspectors was destroyed prior to issuance of this report.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

C. Cameron, Supervisor Regulatory Compliance  
L. Cortopassi, Site Vice President  
K. Erdman, Supervisor, Engineering Programs  
M. Ferm, Manager, Site Performance Improvement  
M. Frans, Manager, Engineering Programs  
W. Hansher, Supervisor, Nuclear Licensing  
K. Ihnen, Manager, Site Nuclear Oversight  
J. James, Manager, Outage  
R. King, Director, Site Maintenance  
K. Kingston, Manager, Chemistry  
T. Maine, Manager, Radiation Protection  
E. Matzke, Senior Licensing Engineer  
S. Miller, Manager, Design Engineering  
V. Naschansy, Director, Site Engineering  
T. Orth, Director, Site Work Management  
A. Pallas, Manager, Shift Operations  
M. Prospero, Division Manager, Plant Operations  
T. Simpkin, Manager, Site Regulatory Assurance  
M. Smith, Manager, Operations

#### **NRC Personnel**

John Kirkland, Senior Resident Inspector

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Opened and Closed

05000285/2013010-01	NCV	Failure to Establish Main turbine Load Change Procedure (Section 4OA4)
05000285/2013010-02	NCV	Failure to Correct Multiple Alarm Response Procedures Related to SIT Operation (Section 4OA4)
05000285/2013010-03	NCV	Failure to Maintain Emergency Operating Procedures (Section 4OA4)
05000285/2013010-04	FIN	Failure to Perform Extent of Condition Evaluation (Section 4OA4)
05000285/2013010-05	NCV	Failure to Follow Work Control Procedures (Section 4OA5)

### Closed

None

### Discussed

05000285/2012301-01	NCV	Seven Examples of Inadequate Procedures for the Mitigating Systems Cornerstone (Section 4OA4)
05000285/2012301-04	NCV	Five Examples of Inadequate Procedures for the Initiating Events Cornerstone (Section 4OA4)
05000285/2012301-06	NCV	Inadequate Procedures with Four Examples for the Barrier Integrity Cornerstone (Section 4OA4)
05000285/2011002-01	NCV	Inadequate Operating Instruction Results in Loss of Auxiliary Feedwater (Section 4OA4)



## LIST OF DOCUMENTS REVIEWED

### Section 40A4: IMC 0350 Inspection Activities (92702)

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
FCSG-32	Work Week Management	41 March 7, 2013
NPM-1.07	Emergency Preparedness	9 February 12, 2013
FCSG-24-4	Condition Report and Cause Evaluation	6a February 19, 2013
FCSG-65-6	System Health Reviews for Restart	0 August 10, 2012

#### NUCLEAR NOTIFICATIONS

CR-2012-08128    CR 2012-06280    CR-2009-0987    CR-2008-2649

#### MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
FCSG-65-2 Tab B	Resolution Narrative, Restart Checklist Item 5.f Emergency Response	2 January 18, 2013
	FCS Emergency Preparedness Excellence Plan	Version 1.3: April 5, 2007
	Apparent Cause Analysis Report CR 2012-08128	2 September 26, 2012
OPPD Policy No. 3.06	Corporate Governance, Oversight, Support, and Perform (GOSP) Model of Fort Calhoun Station	April 8, 2013
	Emergency Planning Health Report	April 8, 2013
EP-AA-125-1001	Exelon Nuclear EP Performance Indicator Guidance	7
	Emergency Planning Oversight Committee Meeting Minutes	March 1, 2012

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Emergency Planning Advisory Committee Minutes	February 27, 2013
	Emergency Planning Advisory Committee Minutes	April 5, 2013
	Emergency Planning Improvement Plan to Address NOS Red Rating	December 14, 2012
	FCS System Health Review, Chemical and Volume Control System	February 13, 2013
	CVC System Scope Memo	October 11, 2012
	System Training Manual, Vol. 12 Chemical and Volume Control System	8
	Maintenance Rule Cause Determination # 06021302	April 12, 2013
	FCS Maintenance Rule Functional Scoping Data Sheet, 0608 CVC CHPUMP	3 September 24, 2009

**Section 40A5: Other Activities**

**PROCEDURES**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
OPD-2-05	Annual Shift Schedule	10 December 29, 2011
SO-O-21	"Shutdown Operations Protection Plan	52 February 12, 2013
SO-G-92	Conduct of Infrequently Performed Procedures	16 February 14, 2012
NOD-QP-15	Qualification of Nuclear Organization Personnel	19 January 24, 2013
SO-O-21	Shutdown Operations Protection Plan	53 April 11, 2013
OPD-2-11	Selection of Candidates for Initial Operator License Class	9 September 13, 2012
OP-ST-ESF-002	Surveillance Test: DG No 1 and No. 2 Auto Operation	60 February 14, 2013

OI-AFW-4	AFW Startup and System Operation	78 July 15, 2010
SO-G-30	Procedure Changes and Generation	134 April 9, 2013
FC-68	Fort Calhoun Station Procedure Change Request	68 August 11, 2011
SO-G-100	Operability Dispositions when Calibrating, Testing, or Operating Safety Related Equipment	7 September 9, 2010
FCSG-24-5	Cause Evaluation Manual	5 December 13, 2012
FCSG-65-6	System Health Reviews for Restart	0
	Main Feedwater System Health Review	December 31, 2012
OPD-5-14	Monitor Program	4
OPD-5-13	Training Ownership and Performance	11
	Site Operational Focus and Conservative Decision Making	
	FCS 2013 Operations Excellence Plan	March 19, 2013
FCSG-32	Work Week Management	41
FCSG-22-8	Desk Guide OM 03: Work Package Control	October 30, 2012
FCSG-22-6	Desk Guide OM-01: Outage PMT Tracking	October 14, 2010
SO-M-101	Maintenance Work Control	100
SO-G-30	Procedure Changes and Generation	134
GOSP (3.06)	Corporate Governance, Oversight, Support, and Perform Model	April 8, 2013
RA 2012-0152	Operator Training Plan for return to 100% CTP	2012

FCSG-7/FC-1349	Human Performance Procedure Pre-Job Brief Checklist	22
OPD-4-16	Operations (Work) Control Center Description	6
SSG-82105g	Scenerio; Loss of Containment Integrity with RCS Leak Scenario	6
SO-G-123	Protected Equipment Program	6
FCSG-22-25	Outage Communication Plan	2
SO-M-100	Conduct of Maintenance	May 23, 2012
NOD-QP-31	Operability Determination Process	53
SO-R-2	Condition Reporting and Corrective Action	53b
FCSG-24 Series	Corrective Action Program Processes	Various
FCSG-27	FCS Decision Making Process	13
RE-CPT-RX-0001	Post Refueling Core Physics Testing and Power Ascension	46
SO-R-2	Condition Reporting and Corrective Action	53b
FCSG-8	Procedure Format and Content	32
FCSG-24-4	Condition Report and Cause Evaluation	6a
FCSG-8A	Document/Form Changes, Format and Content (Non-Plant Procedures)	5
FCSG-24-5	Cause Evaluation Manual	5
FCSG-24-3	Condition Report Screening	6a

FCSG-20	Abnormal Operating Procedure and Emergency Operating Procedure Writer's Guide	10
FCSG-65-6	System Health Reviews for Restart	1
OP-ST-MS-3002	Main Steam System Category B Valve Exercise Test	11
IC-ST-SA-3001A	DG-1 Starting Air Compressors Discharge Check Valves Exercise Test	5
IC-ST-SI-0017	Channel Calibration of Safety Injection Tank SI-6C Nitrogen Pressure, Loop P-2941	5
RE-ST-CEA-0001	Power Dependent Insertion Limits, Deviation, and Sequence Monitoring Test	28
SE-ST-VA-0015	Control Room Charcoal Filter VA-64B Replacement Or Methyl Iodine Removal Efficiency Test	4a
OP-ST-ESF-0011	Channel A and B Automatic and Manual Engineered Safeguard Actuation Signal Test	42
OP-4	Load Change and Normal Power Operation	49
OP-2A	Plant Startup	111
OPD-4-09	EOP/AOP Users Guidelines	17
SO-O-1	Standing Order – Conduct of Operations	100
SO-G-7	Standing Order – Procedure Use and Adherence	74
SO-M-12	Control of Troubleshooting Activities	10
SO-M-101	Maintenance Work Control	100
SO-G-74	Standing Order – Fort Calhoun Station EOP/AOP Generation Program	20

NOD-QP-7	License Amendment Requests (LARs)	44
AOP-21	Reactor Coolant System High Activity	7
ARP-AI-66A/A66A	Annunciator Response Procedure A66A Control Room Annunciator A66A, AFWAS/DSS	14
ARP-AI-66B/A66B	Annunciator Response Procedure A66B Control Room Annunciator A66B, AFWAS/DSS	25
AOP-28	Auxiliary Feedwater System Malfunctions	17
OI-SI-1	Operating Procedure – Safety Injection – Normal Operation	134
ARP-CB-1,2,3/A2	Annunciator Response Procedure A2 Control Room Annunciator A2	40
TDB-AOP-28	Auxiliary Feedwater System Malfunctions	17
ARP-CB-4/A20	Annunciator Response Procedure A20 Control Room Annunciator A20	45
ARP-CB-1,2,3/A1	Annunciator Response Procedure A1 Control Room Annunciator A1	35
OI-RPS-1	Operating Instruction – Reactor Protection System	10
ARP-CB-10,11/A12	Annunciator Response Procedure A12 Control Room Annunciator A12	14
PED-GEI-41	Processing Configuration Changes	18a
NOD-QP-44	Departmental Corrective Action Review Board	1

NUCLEAR NOTIFICATIONS

NUMBER

2013-08116	2013-07800	2011-0839	2002-00632	2013-08667
2013-05780	2013-07977	2011-09754	2012-08132	2012-08136

2013-07253	2013-07870	2012-16683	2012-15342	2012-14144
2012-03140	2012-03144	2012-03143	2013-03141	2012-03138
2011-09653	2011-02994	2012-10972	2012-03139	2010-01704
2013-07970	2012-04984	2011-03016	2013-07911	2012-19512
2012-16590	2012-14797	2009-2317	2010-1649	2010-6190

WORK ORDERS

NUMBER

WO-452940-03	00436452	00404332	00378679	1447
309136	309172	309173	361250	384489
394123	394125	411659	415185	444295
461978				

ENGINEERING CHANGES

NUMBER

49401

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	FCS Technical Specifications	Amendment 262
	FCS Technical Specifications	Amendment 249
	FCS Organizational Chart	April 1, 2013
	SO-G-92 Pre-Test Briefing	
	Pre-Job Brief Checklist for 3/21/2013 replacement of relay 94-AS/LS	
SOER 96-1	Control Room Supervision, Operational Decision-Making, and Teamwork	
	Training Records from the following dates: 1/13/12; 1/20/12; 1/28/13; 2/4/2013; 2/11/13	
	Fort Calhoun Station Operations Department Excellence Plan	February 15, 2013
	FCS Root Cause Analysis 2011-0839, "AFW System Inoperability During Plant Mode Change	1, April 7, 2011

NUMBER

	Fort Calhoun Station System Health Readiness Review for Restart – Steam Generator System	February 14, 2013
TDB-VIII	Technical Data Book – Equipment Operability Guidance	March 12, 2013
TDB-III.42	Technical Data Book – Requirements for ECCS and Containment Cooling Equipment Operation in Mode 3, Transition between Modes 3 and 4 and Mode 4 and 5	3
TDB-III.22	Technical Data Book – Limitation on Power Level Increases and Rod Movements at Power	17
TDB-X	Technical Data Book – Lower Mode Equipment Availability Technical Requirements	1
FCSG-22-6	Desk Guide OM-01: Outage PMT Tracking	3
	Audit Plan SARC Audit #61 Conformance of Facility Operations	August 12, 2011
11-QUA-076	SARC Audit Report No. 29/61 Shift Operations and Clearance/Conformance of Facility Operations	September 22, 2011
09-QUA-045	SARC Audit Report No. 29/61 Shift Operations & Clearances Conformance of Facility Operations	July 28, 2009
	System Health Review: Engineered Safeguards System	February 13, 2013
	System Health Review: Reactor Protection System	February 14, 2013
	Operator Challenge List	April 4, 2013
	Fort Calhoun Station Post-accident Loading Data	April 13, 1973
	System Health Review: Control Rod Drive System	
	System Health Review: Instrument Air System	