



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

January 8, 2016

Lou Cortopassi, Site Vice President
Omaha Public Power District
Fort Calhoun Station
P.O. Box 550
Fort Calhoun, NE 68023-0550

SUBJECT: FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT
NUMBERS 05000285/2015004 AND 07200054/2015001

Dear Mr. Cortopassi:

On December 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed inspections at your Fort Calhoun Station (FCS). On January 7, 2016, NRC inspectors discussed the results of these inspections with you and other members of your staff. Inspectors documented the results of these inspections in the enclosed inspection report.

In this report, NRC inspectors documented three licensee-identified violations, which were determined to be of very low safety significance (Green) or Severity Level IV. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a. of the NRC Enforcement Policy.

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

Geoffrey Miller, Chief
Project Branch D
Division of Reactor Projects

Docket: 50-285; 72-054
License: DPR-40

L. Cortopossi

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Enclosure:

NRC Inspection Reports 05000285/2015004
and 07200054/2015001

w/Attachment: Supplemental Information

Electronic Distribution to Fort Calhoun Station

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See next page

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Letter to Lou Cortopossi from Geoffrey Miller dated January 8, 2016

SUBJECT: FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT
NUMBERS 05000285/2015004 AND 07200054/2015001

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-285 & 72-054

License: DPR-40

Report: 05000285/2015004 & 07200054/2015001

Licensee: Omaha Public Power District

Facility: Fort Calhoun Station

Location: 9610 Power Lane
Blair, NE 68008

Dates: October 1 through December 31, 2015

Inspectors: S. Schneider, Senior Resident Inspector
B. Cummings, Resident Inspector
L. Carson II, Senior Health Physicist
M. Chambers, Physical Security Inspector
J. Kirkland, Senior Operations Engineer
J. Melfi, Project Engineer
J. O'Donnell, CHP, Health Physicist
P. Jayroe, Reactor Inspector
L. Brookhart, Senior ISFSI inspector
E. Simpson, ISFSI Inspector

Approved By: Geoffrey Miller, Chief, Project Branch D
Division of Reactor Projects

SUMMARY

IR 05000285/2015004; 10/01/2015 – 12/31/2015; Fort Calhoun Station; Integrated Inspection Report

The inspection activities described in this report were performed between October 1 and December 31, 2015, by the resident inspectors at Fort Calhoun Station and inspectors from the NRC's Region IV office. NRC inspectors documented in this report three licensee-identified violations of very low safety significance. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Licensee-Identified Violations

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

PLANT STATUS

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

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On November 24, 2015, the inspectors completed an inspection of the station's readiness for seasonal extreme weather conditions. The inspectors reviewed the licensee's adverse weather procedures for cold weather operations and evaluated the licensee's implementation of these procedures. The inspectors verified that prior to the onset of cold weather, the licensee had corrected weather-related equipment deficiencies identified during the previous winter.

The inspectors selected two risk-significant systems that were required to be protected from cold weather:

- Emergency Diesel Generator
- Auxiliary Feedwater

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

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

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On November 20, 2015, and November 29, 2015, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The

inspectors reviewed plant design features, the licensee's procedures to respond to high winds, freezing conditions, and snow accumulation, and the licensee's implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- October 27, 2015, raw water system with component cooling water heat exchanger C out of service for maintenance
- November 19, 2015, steam driven auxiliary feedwater pump following surveillance testing
- November 25, 2015, emergency diesel generator number 2 following maintenance
- December 9, 2015, containment spray train B when containment spray train A was taken out of service for maintenance

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

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

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On October 15, 2015, the inspectors performed a complete system walk-down inspection of number 1 emergency diesel generator. The inspectors reviewed the

licensee's procedures and system design information to determine the correct emergency diesel generator lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

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

- October 29, 2015, basement and personnel corridor area, fire area 6-3
- November 8, 2015, diesel generator room 1, fire area 35A
- November 19, 2015, main control room, fire area 41
- December 10, 2015, health physics corridor, fire area 19
- December 10, 2015, east personnel corridor and personal air lock area, fire area 20-1

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

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On December 4, 2015, the inspectors completed an inspection of underground bunkers susceptible to flooding. The inspectors selected two underground bunkers that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment:

- Manhole 5A
- Manhole 31

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

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

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On December 16, 2015, the inspectors completed an inspection of the readiness and availability of a risk-significant heat exchanger. The inspectors reviewed the data from the performance of Component Cooling Water/Raw Water heat exchanger AC-1D disassembly, cleaning, visual inspection and reassembly activities as outlined in EPRI NP-7552.

Additionally, the inspectors walked down Component Cooling Water/Raw Water Heat Exchanger AC-1D to observe its performance and material condition and verified that the heat exchanger was correctly categorized under the Maintenance Rule and was receiving the required maintenance.

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

b. Findings

No findings were identified.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On November 13, 2015, the inspectors observed simulator training for an operating crew in response to an Auxiliary Feedwater Actuation System malfunction and an Armed Attack. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the training.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On October 2, 2015, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to the declaration of a Notification of Unusual Event due to a suspicious device found in a security vehicle. The inspectors observed the operators' performance related to adherence of abnormal operating procedures, evaluation of plant risk, and assessment of Emergency Action Level criteria.

These activities constitute completion of one quarterly licensed operator performance sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.3 Annual Review

a. Inspection Scope

The inspectors conducted an in-office review of the annual requalification training program to determine the results of this program.

On December 9, 2015, the licensee informed the inspectors of the Fort Calhoun Station operating test results:

- 7 of 7 crews passed the simulator portion of the operating test

- 31 of 33 licensed operators passed the simulator portion of the operating test
- 31 of 33 licensed operators passed the job performance measure portion of the operating test

No remediation was performed for the Fort Calhoun Station operating tests. Two licensed operators who did not pass the simulator or job performance measure portions of the operating test were unavailable for personal reasons and will meet the requalification exam requirements in 2016.

The inspectors completed one inspection sample of the annual licensed operator requalification program.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed three instances of degraded performance or condition of safety-related structures, systems, and components (SSCs):

- November 10, 2015, inadvertent cross-connecting of the main feedwater system with the auxiliary feedwater system
- November 23, 2015, identification of cracked pressurizer heater cables
- December 7, 2015, inadvertent closure of shutdown cooling isolation valves

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- October 28, 2015, planned yellow risk during number 2 emergency diesel generator testing
- November 2, 2015, planned yellow risk during west raw water header maintenance outage
- November 5, 2015, planned yellow risk during diesel driven auxiliary feedwater pump operability verification
- November 23, 2015, planned yellow risk during number 2 emergency diesel generator maintenance

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

These activities constitute completion of four maintenance risk assessments, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

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

- October 21, 2015, operability determination of blowdown isolation valve non-conservative component specifications
- October 22, 2015, operability determination of pressurizer heater bank number 4 due to hot short potential circuit failure following discovery of an unanalyzed condition

- October 26, 2015, operability determination of instrument air accumulator leak on component cooling water valve HCV-401C
- October 29, 2015, operability determination of containment spray discovery of non-conformances with design
- November 4, 2015, functionality determination of raw water flow instrumentation following discovery of a degraded condition
- December 8, 2015, assessment of operator work arounds

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

The inspectors reviewed operator actions taken or planned to compensate for degraded or nonconforming conditions. The inspectors verified that the licensee effectively managed these operator workarounds to prevent adverse effects on the function of mitigating systems and to minimize their impact on the operators' ability to implement abnormal and emergency operating procedures.

These activities constitute completion of six operability review samples, which included one operator work-around sample, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On October 29, 2015, the inspectors reviewed one permanent plant modification to the containment spray ring riser piping and rings to restore operability. The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not adversely impact operator actions that may be required in response to an emergency or other unplanned event.

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

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed four post-maintenance testing activities that affected risk-significant structures, systems, or components (SSCs):

- October 27, 2015, replace control relay for containment air cooling fan VA-7D
- November 5, 2015, charging pump CH-1B discharge drain valve weld repair
- November 16, 2015, charging pump CH-1A rebuild
- December 15, 2015, emergency diesel generator damper actuator replacement

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

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

Containment isolation valve surveillance tests:

- October 26, 2015, Component Cooling Category A and B Valve Exercise Test

Other surveillance tests:

- October 16, 2015, automatic load sequencer test
- November 19, 2015 steam driven auxiliary feedwater flow verification
- December 9, 2015, number 1 emergency diesel generator surveillance test

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

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

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). During the inspection, the inspectors interviewed licensee personnel and reviewed licensee performance in the following areas:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/post-job reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

These activities constitute completion of one sample of occupational ALARA planning and controls as defined in Inspection Procedure 71124.02.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

a. Inspection Scope

The inspectors evaluated the accuracy and operability of the licensee's personnel monitoring equipment, verified the accuracy and effectiveness of the licensee's methods for determining total effective dose equivalent, and verified that the licensee was appropriately monitoring occupational dose. The inspectors interviewed licensee personnel, walked down various portions of the plant, and reviewed licensee performance in the following areas:

- External dosimetry accreditation, storage, issue, use, and processing of active and passive dosimeters
- The technical competency and adequacy of the licensee's internal dosimetry program
- Adequacy of the dosimetry program for special dosimetry situations such as declared pregnant workers, multiple dosimetry placement, and neutron dose assessment
- Audits, self-assessments, and corrective action documents related to dose assessment since the last inspection

These activities constitute completion of one sample of occupational dose assessment as defined in Inspection Procedure 71124.04.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index: Emergency AC Power Systems (MS06)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of October 1, 2014 through September 30, 2015 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for emergency ac power systems as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Residual Heat Removal Systems (MS09)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of October 1, 2014 through September 30, 2015 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for residual heat removal systems as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors reviewed the licensee's reactor coolant system chemistry sample analyses for the period of October 1, 2014 through September 30, 2015 to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the reactor coolant system specific activity performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Semiannual Trend Review

a. Inspection Scope

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

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

b. Findings and Observations

No findings were identified.

Equipment Reliability

In NRC Inspection Report 05000285/2015002, the inspectors identified a continuing adverse trend in equipment reliability at Fort Calhoun Station. The inspectors reviewed equipment reliability challenges from 2014 and 2015 through completion of the refueling outage in June, 2015. These challenges resulted in equipment unavailability, unplanned technical specification entries, operator burdens, and in some cases, plant transients. Of more recent concern were a number of equipment reliability issues during the refueling outage that affected safety system availability and plant performance. The licensee took specific actions to correct the individual equipment performance issues during the observed timeframe. In addition, the licensee conducted a start-up challenge review of the events that occurred during the outage prior to plant start-up. Finally, the licensee senior leadership team had implemented engineering department excellence plans, equipment reliability improvement activities with engineering in partnership with

the maintenance and operating departments, focused on operating experience, self-assessment activities and benchmarking, and utilized a plant health committee Top 10 list to improve critical system health. Since that time, the licensee has continued to reduce backlogs in open operability determinations and temporary configuration changes. In addition, the licensee's plant health committee continues to focus on their Top 10 equipment list to resolve those critical items. The licensee engineering leadership team is also committed to the continuing improvement of the boric acid corrosion control and maintenance rule programs.

The inspectors monitored equipment reliability over the past two quarters. Although some improvement has been noted, such as the apparent resolution of air voids in the component cooling water system and a reduction in the number of long term operability evaluations, the inspectors continue to observe equipment reliability issues at Fort Calhoun Station. Examples include: control room air conditioning failures, continuing safety injection tank (SIT) check valve leakage requiring frequent SIT drain and refills, reactor coolant pump RC-3A seal performance and vibration issues, and a pressurizer level charging pump control circuit failure. The inspectors have determined that additional monitoring of the licensee's progress in improving equipment reliability at the Fort Calhoun Station is warranted and will be evaluated with the results documented in the next semiannual trend review.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected one issue for an in-depth follow-up:

- On November 30, 2015, gas voiding in the component cooling water system

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to minimize the likelihood of voids developing in the component cooling water system.

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

b. Findings

No findings were identified.

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

.1 Plant Events

a. Inspection Scope

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

- Operator response to the declaration of an unusual event due to a security condition on October 2, 2015
- Operator response to an unanalyzed condition due to inadequate electrical isolation between the main control room and local operation of pressurizer heater bank 4, on October 21, 2015

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000285/2015-001-0. "Inadequate Design of High Energy Line Break Barriers"

The licensee submitted this report after they discovered that an inadequate High Energy Line Break (HELB) barrier had not been reported when it was originally discovered on September 30, 2013. The degraded barrier has been repaired and this LER was issued to document the original unanalyzed condition. The inspectors considered the licensee's previous actions to repair the HELB barrier and the documentation of this issue in the LER to be adequate and appropriate. The failure to report this condition in a timely manner is considered a minor violation in accordance with Section 2.3.1 of the Enforcement Policy. This failure to comply with the 10 CFR 50.73 reporting requirements in a timely manner constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy. Therefore, this LER is closed. Documents reviewed are listed in the attachments.

.3 (Closed) Licensee Event Report (LER) 05000285/2015-002-0. "Inoperable Auxiliary Feedwater System Due to Inadequate Procedure Change"

The licensee submitted this report after they discovered that a procedure momentarily cross-tied Main Feedwater (MFW) with Auxiliary Feedwater (AFW) during system

restoration steps. The failure to maintain qualified boundaries between these two systems resulted in the inoperability of the AFW system. The licensee causal analysis determined that procedure reviewers did not understand piping class separation requirements. To address this condition, the licensee conducted an extent of condition review and identified that additional AFW system procedures were affected. These AFW procedures were administratively restricted for use until they were subsequently revised to correct the lineups. No system procedures other than AFW were found to have similar cross connecting issues. In addition, the licensee has submitted a Training Request Form to address operators understanding of the operability impact of cross-typing class and non-class piping systems.

NRC inspectors reviewed the details of this condition including corrective action documents, procedure revisions, and training documentation. Based on a review of the condition, the inspectors determined that during the period that the MFW and AFW systems were cross-tied that the licensee was in violation of Technical Specification 2.5(1) which requires two AFW trains to be operable when cold leg temperature is above 300F. This violation was identified by the licensee and is discussed in further detail in section 4OA7 of this report. Therefore, this LER is closed. Documents are listed in the attachment.

.4 (Closed) Licensee Event Report (LER) 05000285/2015-003-00, "Containment Spray Inoperable due to Original Design Error"

On April 16, 2015, during a refueling outage the licensee identified that because the original design of the plant failed to consider the thermal effects of a main steam line break or loss of coolant accident on containment spray piping, modifications were necessary to ensure the operability of the containment spray system during one of these postulated events. This condition existed because the original design of the plant did not account for the rise in the temperature of the dry containment spray piping inside containment. During a main steam line break or loss of coolant accident this piping would heat up more rapidly than piping that contains water and could reach temperatures of up to 290 degrees Fahrenheit. This rise in temperature would impose previously unaccounted for thermal stresses on the piping which in turn would transmit those stresses to the containment liner via certain pipe supports. The licensee corrected the problem by performing modifications to the containment spray pipe supports to ensure that stress limits would not be exceeded in the event of the aforementioned condition. The licensee also performed calculations and determined that prior to the modifications, if the postulated event were to occur, the containment spray piping and supports would have been able to deliver adequate flow despite exceeding ASME Section III Appendix F stress limits for one pipe support.

NRC inspectors reviewed the details of this condition including pertinent calculations, corrective action documents, procedures, and completed work documentation associated with the modifications to the containment spray pipe supports. Based on a review of the condition inspectors determined that during the period prior to the modifications of the containment spray supports the licensee was in violation of Technical Specification 2.4(1)a.iv which requires all piping associated with the containment spray pumps to be operable while the reactor is in operation. This violation

was identified by the licensee and is discussed in further detail in section 4OA7 of this report. Therefore, this LER is closed. Documents are listed in the attachment.

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

4OA5 OTHER ACTIVITIES

.1 Operation of an Independent Spent Fuel Storage Facility Installation (ISFSI) at Operating Plants (60855.1)

a. Operation of an ISFSI

Inspection Scope

A routine ISFSI inspection was conducted of the Fort Calhoun Station (FCS) ISFSI on September 21-24, 2015, by Region IV Division of Nuclear Material Safety inspectors. The inspectors observed and evaluated select licensee loading, processing, and heavy load procedures associated with the licensee's ISFSI program. Inspectors performed a review of the dry fuel storage records for the casks loaded at the ISFSI to verify that the licensee had loaded fuel in accordance with the Technical Specifications (TS) for approved contents. A document review of routine ISFSI activities since the last NRC ISFSI inspection (April 2013) was performed by the inspectors. The licensee had not loaded any new canisters since the last NRC routine ISFSI inspection.

The inspectors requested documentation related to maintenance of the fuel building cask handling crane. Documents were provided that demonstrated the fuel building cask handling crane was inspected on an annual basis in accordance with the American Society of Mechanical Engineers (ASME) B30.2 safety requirements.

The inspectors reviewed the radiological conditions at the FCS ISFSI through a document review of the most recent radiological survey and three years of thermoluminescent dosimeter (TLD) monitoring data from around the ISFSI. A dry-cask-loading supervisor and one radiation protection (RP) technician accompanied the NRC inspectors during a walk-down of the ISFSI pad. A radiological survey was performed by one RP technician to record gamma exposure rates. The measurements taken by the RP technician and independently confirmed by the NRC inspectors were consistent with measurements recorded on the most recent ISFSI site survey. The radiological conditions in and around the ISFSI were as expected for the age, heat-load, and number of casks currently loaded at the ISFSI. The inspectors reviewed Annual Radiological Environmental Operating Reports for the FCS site for the last three years. The reports documented the dose equivalent to any real individual located beyond the site controlled area had been well below the 10 CFR 72.104(a)(2) requirement of less than 25 mrem per year.

The NRC inspectors reviewed the Corrective Action Program (CAP) associated with the ISFSI. A list of condition reports issued since the last NRC inspection conducted in April 2013, was provided by the licensee for the cask handling crane and ISFSI operations.

Of the list of Condition Reports (CRs) provided relating to the ISFSI and the cask handling cranes, the inspectors selected 37 for further review. The CRs were related to a variety of issues. The condition reports reviewed were well documented and properly categorized based on the safety significance of the issue. The corrective actions taken were appropriate for the situations.

The inspectors reviewed the licensee's 10 CFR 72.48 screenings and evaluations for ISFSI program changes since the last NRC routine ISFSI inspection. Of the list of screenings provided by the licensee, the inspectors selected five for further review. Fort Calhoun Station had not performed any full 72.48 evaluations since the last NRC ISFSI inspection. The inspectors determined that the licensee had adequately evaluated the screenings reviewed.

The inspectors performed an on-site review of the Quality Assurance (QA) audits and QA surveillance reports related to dry cask storage activities at the FCS ISFSI. The QA audit reports and surveillances resulted in several condition reports. The inspectors reviewed the corrective actions resulting from the CRs to ensure that the identified deficiencies were properly categorized based on its safety significance and were properly resolved.

b. Findings

Adequate Analysis that Documents Protection of the ISFSI from Fires and Explosions

Introduction. The inspectors identified an unresolved issue associated with the licensee's ISFSI Fire and Explosion Hazard Analysis. Federal Regulations 10 CFR 72.212(b)(3) required general licensees to ensure that each cask used conforms to the terms, conditions, and specifications of the Certificate of Compliance. During a review of FCS Updated Fire Hazards Analysis (UFHA) EA97-001 Appendix D "ISFSI Fire and Explosion Hazards Review," further information was required to determine if FCS was in compliance with the analysis.

Description. The FCS UFHA EA97-001 Appendix D was dated March 28, 2006. Section 3.3.2 of the Appendix documented that the analysis was based on a walk-down of the station that took place in June of 2005. Many examples were found during the review of the UFHA such that the NRC was unable to substantiate whether or not the licensee's analysis bounded the current operations and site configuration around the ISFSI.

Many referenced analyses and sections in the UFHA referred to use of the light-weight transfer cask and not the heavier OS197 Transfer Cask that is currently used by the licensee. A walk down of the storage yard to the south of the ISFSI identified a few office trailers and other miscellaneous combustible equipment that was not discussed in the UFHA. In 2007, Engineering Change 29295 replaced the main transformer. It was undetermined if this transformer was the same transformer that was analyzed in Section 3.3.2 of the ISFSI Fire and Explosion Hazards Review.

The licensee's review of this issue will be tracked as an Unresolved Item (URI) until the NRC is provided sufficient information to determine if ISFSI operations are bounded by

the site's UFHA. (URI 07200054/5015004-01, "Adequate Analysis that Documents Protection of the ISFSI from Fires and Explosions").

4OA6 Meetings, Including Exit

On September 24, 2015, the inspectors debriefed Mr. S. Dean, Plant Manager, and other members of the licensee's staff of the results of the ISFSI inspection documented in Section 4OA5.

On October 23, 2015, and after the Regional staff received consultation from NRC Headquarters Division of Spent Fuel Management's Spent Fuel Licensing Branch, regarding the Licensee identified violation discussed in Section 4OA7.1, the inspectors conducted a telephonic exit with Mr. S. Dean, Plant Manager, and other staff members. The inspectors presented the inspection results to members of the licensee management and staff. Licensee personnel acknowledged the information presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered propriety. No propriety information was identified.

On November 19, 2015, the inspectors presented the inspection results to Mr. L. Cortopassi, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On December 9, 2015, the inspectors obtained the final annual cycle results and exited with Mr. B. Blessie, Operator Training Instructor. The inspectors did not review any proprietary information during this inspection.

On January 7, 2016, the inspectors presented the inspection results to Mr. L. Cortopassi, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and were violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as non-cited violations.

- .1 Title 10 CFR 72.174 requires that each licensee maintain sufficient records to furnish evidence of activities affecting quality. Records pertaining to the design, fabrication, erection, testing, maintenance, and use of structures, systems, and components important to safety must be maintained by or under the control of the licensee until the NRC terminates the license. Contrary to the above, as of June 21, 2013, Fort Calhoun failed to maintain sufficient records to furnish evidence of activities affecting quality. Specifically, the licensee did not maintain records for loading activities associated with DFS-HSM-06 that was placed on the ISFSI pad in July of 2009. This violation was identified by FCS and placed in their corrective action program (CR 2013-12884). The fuel assembly data was reconstituted based on records from the Reactor Engineering group, and the canister

helium leak-test data was reconstituted based on the helium leak-test technician's field notes. The remaining canister records associated with the canister processing, sealing, and transportation to the ISFSI, including several TS requirements, were not found. Fort Calhoun reconstituted the fuel and helium leak test data and conducted interviews with cask loading personnel to conclude that there was no evidence to suggest that loading activities did not comply with the licensee's procedures and the licensed Technical Specifications. This violation did not have any safety impact because all fuel assemblies met the requirements for burn-up, decay heat, and cooling time and the licensee demonstrated that the canister integrity was intact based on the reconstituted helium leak test records. All the fuel inside the canister and the cask remain in a safe condition. This finding was reviewed by NRC Headquarters Division of Spent Fuel Management's Spent Fuel Licensing Branch. Based on the reconstituted records and interviews with the dry fuel loading staff, the NRC found no evidence to demonstrate that the canister did not meet the required license conditions and as such, found the canister acceptable for continued storage under FCS's general Part 72 license. However, though the canister is acceptable for storage, the licensee must track this issue to identify that further analyses may be required for this canister to meet all applicable Part 71 requirements to be acceptable for transportation.

In accordance with the NRC Enforcement Policy Section 2.2 and IMC 0612 Section 03.23, Part 72 ISFSI inspection findings follow the traditional enforcement process and are not dispositioned through the Reactor Oversight Process or the Significance Determination Process. The violation screened as having very low safety significance, Severity Level IV, and is being treated as a non-cited violation, consistent with Section 2.3.2.a. of the Enforcement Policy. The violation was determined to be more than minor since the licensee failed to establish, maintain, or implement adequate controls over procurement, construction, examination, or testing processes that are important to safety. The violation was entered into the licensee's corrective action program as CR 2013-12884. Following identification of the issue the licensee performed an assessment that showed the cask would continue to perform its design function. Corrective actions for this issue included performing an extent of condition review, performing an apparent cause analysis report, reconstitution of the missing documents, conducting interviews with the dry cask loading personnel, providing training to the staff involved, and changing processes and responsibilities within FCS Records Management Group.

- .2 Technical Specification (TS) 2.4(1)a.iv requires that all valves, piping, and interlocks associated with the components of the containment cooling system required to function during accident conditions be operable. In the event that any of these components, required to function during accident conditions become inoperable, the reactor shall be placed in a hot shutdown condition within 12 hours. The containment spray pumps and the associated piping are part of the containment cooling system. Prior to making modifications to containment spray piping in 2015, the operability of this piping would have been challenged by a main steam line break or a loss of coolant accident due to thermal stresses induced in the piping after a rise in containment temperature after the postulated event. Operation prior to the implementation of the modifications was a violation of the technical specification requirements to maintain operability of containment cooling systems.

The violation is more than minor because it is associated with the design control attribute of the mitigating systems cornerstone because the failure to anticipate the rise in containment spray piping temperature dates back to the original design of the plant. This adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The violation was of very low safety significance because although the subject piping was inoperable due to exceeding code specified stress limits, analysis showed that the piping would have been able to perform its safety function to deliver adequate containment spray flow in the event of an accident. The licensee entered the issue into their corrective action program as Condition Report 2015-04578.

- .3 Technical Specification (TS) 2.5(1) requires two trains of auxiliary feedwater (AFW) to be operable when cold leg temperature is above 300F. In the event that both trains become inoperable, immediate action is required to restore one AFW train to operable status. Technical Specification 2.0.1 and all TS actions requiring mode changes are suspended until one AFW train is restored to operable status. Operation with the main and auxiliary feedwater cross-tied was a violation of the technical specification requirements to maintain operability of AFW systems.

The violation is more than minor because it is associated with the configuration control attribute of the mitigating systems cornerstone because the failure to prevent cross-tying these systems resulted in unrecognized inoperability of both trains of AFW. This adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The violation was of very low safety significance because although MFW and AFW were momentarily cross-tied, this condition existed for only a brief period of time as operators restored system line-ups following system testing. In addition, a Senior Reactor Analyst evaluated the postulated main feedwater line break frequency and exposure time of the condition and determined the likelihood of this event during the exposure time is less than the Green/White threshold and of very low safety significance. The licensee entered the issue into their corrective action program as Condition Report 2015 03698.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Beck, Manager, Chemistry, Environmental, and Radwaste
B. Blome, Manager, Regulatory Assurance
D. Brehm, Supervisor, Radiation Protection
C. Cameron, Principal, Regulatory Specialist
H. Childs, Manager, Security
L. Cortopassi, Site Vice President
S. Dean, Plant Manager
A. Dudas, Radiation Health Specialist, Radiation Protection
L. Eaton, Licensed Operator
S. Fatora, Director, Site Work Management
H. Goodman, Director, Site Engineering
M. Holaway, Licensed Operator
R. Hugenholtz, Manager, Nuclear Oversight
T. Jantzi, Unit Supervisor
D. Little, Health Physicist, Radiation Protection
T. Maine, Manager, Radiation Protection
E. Matzke, Senior Licensing Engineer
D. Ortiz, Shift Technical Advisor
A. Pallas, Shift Manager
T. Parent, Engineering
M. Peak, Operator Burdens Coordinator
B. Pearson, Supervisor, Radiation Protection
E. Plautz, Manager, Emergency Planning
C. Scofield, Design Engineering
S. Swanson, Director, Operations
R. Swerczek II, Engineering
P. Turner, ISFSI Manager
T. Uehling, Manager, Training

NRC Personnel

M. Sampson, Division of Spent Fuel Management

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

07200054/2015001-01	URI	Adequate Analysis that Documents Protection of the ISFSI from Fires and Explosions (Section 4OA5)
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Closed

05000285/2015-001-00	LER	Inadequate Design of High Energy Line Break Barriers (Section 4OA3)
05000285/2015-002-00	LER	Inoperable Auxiliary Feedwater System Due to Inadequate Procedure Change (Section 4OA3)
05000285/2015-003-00	LER	Containment Spray Inoperable Due to Original Design Error (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-EW-1	Extreme Weather	33
SO-G-119	Site Wind Generated Missile Protection Standards	2
OP-AA-108-111-1001	Severe Weather and Natural Disaster Guidelines	12
WC-AA-107	Seasonal Readiness	16
SA-AA-2114	Winter Safety	3
AOP-1	Acts of Nature	45

Condition Reports (CRs)

2013-0899	2014-14053	2014-14241	2014-14483	2014-14701
2014-15353	2015-0034	2015-0056	2015-0186	2015-0315
2015-3969	2015-11976	2015-11992	2015-13089	

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	FCS Snow Removal Plan	
USAR 9.8	Raw Water System	36

Section 1R04: Equipment Alignment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-DG-1	Emergency Diesel Generator No. 1 Operating Instruction	64
OI-CS-1	Containment Spray Normal Operation	51
OI-DG-2	Emergency Diesel Generator No. 2 Operating Instruction	70
OI-RW-1	Raw Water System Normal Operation	108
OP-ST-AFW-0004	Auxiliary Feedwater Pump FW-10 Operability	7
IC-ST-IA-3009	Operability Test of 1a-YCA-1045-C and Close Stroke Test YCV-1045	7
OI-AFW-1	Auxiliary Feedwater Operating Instruction	85
SO-G-123	Protected Equipment Program	8

Condition Reports (CRs)

2014-0424	2014-1637	2014-2858	2014-4205	2014-6167
2014-6314	2014-6303	2014-6401	2014-13768	2015-1271
2015-1293	2015-10464	2015-13104	2015-13324	

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
USAR 8.4	Emergency Power Sources	19
DBD-112	Emergency Diesel Generators Design Basis Document	31
USAR 9.8	Raw Water System	35

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
11405-M-264	Instrument Air Diagram	66
B120F07001	Starting Air System Schematic for DG-1	38
11405-M-262	Fuel Oil Flow Diagram	65
B120F04002	Jacket Water Schematic for DG-1	9
B120F03001	Lube Oil System Schematic for DG-1	16
11405-M-100	Raw Water Flow Diagram	105
E23866-210-130	Safety Injection and Containment Spray System Flow Diagram P & ID	118

11405-M-252	Steam P&ID, SH1	116
11405-M-253	Steam Generator Feedwater and Blowdown P&ID, SH4	42
11405-M-264	Instrument Air Diagram	66
B120F07001	Starting Air System Schematic for DG-1	38

Condition Reports (CRs)

2015-13104

Work Orders

549926-01 549771-01

Section 1R05: Fire Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AOP-06-02	Fire Emergency Uncontrolled Areas of Auxiliary Building	6
AOP-06-03	Fire Emergency Miscellaneous Areas	4
SO-G-28	Station Fire Plan	89
SO-G-28	FCS Standing Order, Page 20 of 234	90
SO-G-102	Fire Protection Program	21
CC-FC-201	Fire Protection Program	0
OP-ST-FP-0003	Fire Protection System Diesel Generator Rooms Sprinkler Functional Test	16

Condition Reports (CRs)

2013-19962 2014-8637 2014-12418 2015-12528 2015-12538

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EA97-001	Updated Fire Hazards Analysis	18
USAR 9.11	Fire Protection System	25
	Integrated Work Schedule	October 29, 2015
EA98-005	Fire Barrier Evaluation	8
USAR 9.11	Auxiliary Systems Fire Protection System	28
FC05814	Combustible Loading Calculation, Pages 1, 38, 39, 130, 131	13

Work Orders

484903

Section 1R06: Flood Protection Measures

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EM-FLP-AE-0001	Inspection and Dewatering of Manholes	1

Condition Reports (CRs)

2009-4216	2012-4997	2015-11980	2015-13218	2015-13256
2015-14367				

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
PBD-30	Cables and Connections	2
EC 56806	Wireless Remote Level Indication for Manholes	0
LIC 120041	Reply to Notification of Violation EA-12-035	April 12, 2012
ER-AA-300-1	Cable Condition Monitoring Program	0

Section 1R07: Heat Sink Performance

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
PE-RR-CCW-0100	Disassembly, Cleaning, and Repair of CCW Heat Exchanger-Raw Water Side	44

Work Orders

522251

Title

Maintenance Rule Functional Scoping Sheet for AC-1D

EPRI NP-7552 Heat Exchanger Performance Monitoring Guidelines

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

Procedures

<u>Number</u>	<u>Title</u>
AOP-37	Section II, Credible Site Specific Threat

Miscellaneous Documents

<u>Title</u>	<u>Revision/Date</u>
Emergency Action Level Criteria	
Reactor Plant Notification Worksheets	October 2, 2015
Simulator Scenario Guide 82111s, Inadvertent AFAS Control Room Crew in SCBAs	3a
Simulator Scenario Guide 82111V-2, Armed Attack	11

Section 1R12: Maintenance Effectiveness

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-310-1004	Maintenance Rule-Performance Monitoring	13
OI-AFW-4	Auxiliary Feedwater Startup System Operations	89
ER-AA-310	Implementation of the Maintenance Rule	9
ER-AA-310-1005	Maintenance Rule-Dispositioning Between (a)(1) and (1)(2)	7
ER-AA-310-1001	Maintenance Rule-Scoping	4
ER-AA-310-1002	Maintenance Rule Functions	3
ER-AA-310-1003	Performance Criteria Selection	4

Condition Reports (CRs)

2015-10170	2015-10177	2015-3698	2015-11560	2015-12414
2015-12825	2015-12828			

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Maintenance Rule In Box Database Disposition of CR 2015-10170	
	Maintenance Rule Scoping Data Sheet for Pressurizer Heaters	
LER 2015-002	Inoperable Auxiliary Feedwater System Due to Inadequate Procedure Change	0

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
Training Request Form, TQ-FC-221-FO50	Operability Impact of Cross-tying Class and Non-Class Piping Systems	
	Maintenance Rule Scoping Document for Auxiliary Feedwater System	
	Exelon System Inbox Data Base Entries for CR 2015-3698	
	Maintenance Rule Expert Technical Meeting Minutes Dated November 19, 2015	
	(a)(1) Action Plan for HCV-347/348	
	Minutes from Maintenance Rule Expert Technical Panel 1	November 15, 2015
RG 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	3
NUMARC 93-01	Industry Guidelines for Monitoring Effectiveness of Maintenance at Nuclear Power Plants	2

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ER-AA-600	Risk Management	7
ER-AA-600-1011	Risk Management Administrative Guidance	14
ER-AA-600-1042	On-line Risk Management	9
FCSG-19	Performing Risk Assessments	17
SO-G-96	Planned LCO Entry Criteria and Equipment Reliability Control	15
SO-G-123	Protected Equipment Program	8
WC-AA-101	On-Line Work Control Process	23
WC-AA-104	Integrated Risk Management	21
OP-PM-AFW-0004	Third Auxiliary Feedwater Pump Operability Verification	41
OP-ST-DG-0002	Emergency Diesel Generator Check	78
EM-PM-EX-0202	AK-2A-25 and AK-7A-25 Circuit Breaker Inspections	41

Condition Reports (CRs)

2015-2302

Work Orders

543340

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Equipment Out of Service Quantitative Risk Assessment Tool	
	Work Schedule of Week	October 26, 2015
	Work Schedule of Week	November 2, 2015
RG 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	39
NUMARC 93-01	Industry Guidelines for Monitoring Effectiveness of Maintenance Nuclear Power Plants	2

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-FC-108-115	Operability Determinations	2
QCP-400	Visual Inspections	19
OP-ST-CCW-3006B	Component Cooling Category A and B Valve Exercise Test (for the C and D valves)	0a
AOP-17	Loss of Instrument Air	16
OP-ST-RW-3031	AC-1D Raw Water Pump Quarterly In-service Test	42
AOP-18	Loss of Raw Water	86
OP-AA-102-103	Operator Work Around Program	4
OP-AA-102-103-1001	Operator Burdens and Plants Significant Decision Impact Program	6

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
11405-M-40	Auxiliary Coolant Component Cooling System Flow Diagram	36

Condition Reports (CRs)

2015-04654	2015-04578	2014-12535	2015-1268	2015-12605
2015-12195	2015-12123	2015-9469	2015-11779	2015-10977
2015-9958	2015-11990			

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
FC08434	Calculation: Operability Evaluation of Containment Spray Piping and Structural System	0
FC08437	Calculation: Containment Spray Pipe Support Stiffness Evaluation	0
ASME BPVC Section III Div 1 Appendix F	Rules for Evaluation of Service Loadings With Level D Service Limits	1983
PLDBD-ME-10	Plant Level Design Basis Document for Pipe Stress and Supports	17
FCS-179967- RP01	Containment Spray System Past Operability Report	0
EC66593	Engineering Change: Containment Spray System Past Operability Report	0
USAR Appendix F	Classification of Structures and Equipment and Seismic Criteria	7
FC08436	Calculation: Evaluation of Stiffness for Containment Spray U-Bolts	0
TS 2.15.3	Alternate Shutdown Panel	
USAR 7.6.8	Alternate Shutdown Capability	
EA 11-026	Design Requirements for Back-up systems for Air Operated Valves	1
USAR 4.3.1	Component and System Design and Operation	
TS 2.1.7	Pressurizer	
DBD-116	Feedwater System Design Basis Documents	
USAR 14.9	Loss of Load Analysis	17
USAR 14.10	Malfunctions of the Feedwater System	27
AU6184	Steel Valve Body-Fisher Type	
FC7863	HELB Mass and Energy Release in the Auxiliary Building	1
TS 2.4	Containment Cooling	249

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
TS 3.3	Reactor Coolant and other Components Subject to ASME XI Boiler and Pressure Vessel Code	230
USAR 9.8	Raw Water System	30
TDB-111.34	AC-1D Pump Curve	35
11405-M-100	Raw Water Flow Diagram	
11405-M-253	Steam Generator Feedwater and Blowdown Flow Diagram	99
EN 51487	Unanalyzed Condition Affecting the Capability to Transfer Pressurizer Heater Control from the Control Room to the Alternate Shutdown Locations due to the Potential for an External Hot Short from a Fire in the Control Room or Cable Spreading Room	
TD J072.0080	Instruction Manual for D-251 Pneumatic Piston Damper Actuators	0

Work Orders

541720 560432

Section 1R18: Plant Modifications

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-FC-108-115	Operability Determinations	2

Condition Reports (CRs)

2014-12535 2015-04578 2015-04654

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
FC08434	Calculation: Operability Evaluation of Containment Spray Piping and Structural System	
FC08437	Calculation: Containment Spray Pipe Support Stiffness Evaluation	
ASME BPVC Section III Div I Appendix F	Rules for Evaluation of Service Loadings with Level D Service Limits	1983

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
PLDBD-ME-10	Plant Level Design Basis Document for Pipe Stress and Supports	17
FCS-179967-RP01	Containment Spray System Past Operability Report	0
EC 66593	Engineering Change: Containment Spray System Past Operability Report	0
EC65926	Engineering Change: Modify Containment Spray Header and Ring Pipe Supports – Comp Measure to Support Operability 14-018	12
USAR Appendix F	Classification of Structures and Equipment and Seismic Criteria	7
FC08436	Calculation: Evaluation of Stiffness for Containment Spray U-Bolts	0

Section 1R19: Post-Maintenance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
PED-EWP-8	Termination of Cables and Internal Panel Wiring	9
MA-AA-716-012	Post Maintenance Testing	20
MM-RR-CH-0001	Inspection and Repair of Charging Pump Hydraulic Sections	11
OP-ST-ESF-0010	Channel B Safety Injection Containment Spray and Recirculation Actuation Signal Test	59
OP-ST-CH-3003A	Chemical and Volume Control System Pump/Check Valve In-service Test for A Train	5
WPS-801	Welding Procedure Specification	14
PED-GEI-55.7	Documentation for an ASME, Section X1-1998/2000A Repair/Replacement Activity	13
PED-GEI-7	Specification of Post Modification Test Criteria	15a

Condition Reports (CRs)

2012-05218	2015-12512	2015-12544	2015-12390
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Work Orders

531137	546808	546864	552276-01	561530
568072-01	568669			

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
161F618	Sh. 9 Panel AI-30B	24
E-4126	Logic Diagram Panels AI-30A & B	6

Number

Title

Weld Data Form

Charging Pump Schematic

Engineering Change (EC) 64942, Install Rings on Charging Pump CH-1A, CH-1B, and CH-1C Plungers

EC 41693 Replace YCV-871DO Actuators on DG-2 Inlet Air Damper YCV-871D

Section 1R22: Surveillance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-ST-ESF-22	Automatic Load Sequencer Test	30
SO-G-23	Surveillance Test Program	
OP-ST-CCW-3006B	Component Cooling Category A and B Valve Exercise Test	
OP-ST-AFW-0004	Auxiliary Feedwater Pump FW-10 Operability Test	7
IC-ST-IA-3009	Operability Test of 1A-YCA-1045-C and Close Stroke Test of YCV-1045	7

Work Orders

549926-01 549771-01

Condition Reports (CRs)

2014-8080 2014-8701 2015-12268 2015-13104

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
USAR 8.4	Emergency Power Sources	19
DBD-112	Emergency Diesel Generators Design Basis Document	31
USAR 7.3	Engineered Safeguards Controls	16

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
TS 3.1	Instrumentation and Control Surveillance Requirements	257
TS 2.15	Instrumentation and Control Systems LCO	270
TS 2.4	Containment Cooling	251
EA92-072	Diesel Generator Loading Transient Analysis	8
USAR 4.5.6.5	In-Service Testing	15
USAR 9.7	Component Cooling Water System	16

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
11405-M-252	Steam P&ID, SH1	116
11405-M-253	Steam Generator Feedwater and Blowdown P&ID, SH4	42

Section 2RS2: Occupational ALARA Planning and Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RP-AA-16	ALARA Program Description	0
RP-AA-400	ALARA Program	12
RP-AA-401	Operational ALARA Planning And Controls	19
RP-AA-401-1002	Radiological Risk Management	7
RP-AA-400-1006	Outage Exposure Estimating and Tracking	4
RP-AA-400-1002	Dose Equalization	1
RP-AA-400-1004	Emergent Dose Control and Authorization	7

Condition Reports (CRs)

2014-11660	2014-13215	2015-01202	2015-03474	2015-05171
2015-05625	2015-05841	2015-06599	2015-07058	2015-07555
2015-07720	2015-07829	2015-08943	2015-10560	

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
NOSA-FCS-15-06	Radiation Protection Audit Report Fort Calhoun Station	July 24, 2015

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
RA 2014-1818	Focused Area Self-Assessment Occupational ALARA Planning and Control/Occupational Dose Assessment	October 5, 2015

Radiation Work Permits (RWPs)

<u>Number</u>	<u>Title</u>	<u>Revision</u>
15-0325	Forced Shutdown	0
15-0605	Containment Building Scaffolds	0
15-0611	Containment Valves	0
15-0613	Reactor Head Disassembly/Reassembly	0
15-0643	Pressurizer Heater Replacement	0
15-0655	Reactor Head Boric Acid Inspection and Recovery	0

ALARA Planning, In-Progress Reviews, and Post-Job Reviews

<u>RWP Number</u>	<u>Title</u>	<u>Date</u>
15-0605	ALARA Plan	February 25, 2015
15-0605	ALARA Post-Job Review	June 26, 2015
15-0611	ALARA Post-Job Review	June 15, 2015
15-0611	In-Progress Review (80%)	April 29, 2015
15-0613	ALARA Plan	March 2, 2015
15-0613	ALARA Post-Job Review	August 3, 2015
15-0613	In-Progress Review (80%)	May 19, 2015
15-0643	ALARA Post-Job Review	May 11, 2015
15-0655	ALARA Plan	April 30, 2015
15-0655	ALARA Post-Job Review	August 1, 2015
15-0655	In-Progress Review (Job Scope Change)	May 18, 2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	2015-2019 Dose Excellence Plan	
CR 2015-6726	Root Cause Analysis Report	July 1, 2015
FCR 27	Fort Calhoun Station Outage Report	2015

Section 2RS4: Occupational Dose Assessment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RP-AA-210	Dosimetry Issue, Usage, and Control	25
RP-AA-220	Bioassay Program	10
RP-AA-270	Prenatal Radiation Exposure	7
RP-AA-301	Radiological Air Sampling Program	8
RP-AA-203-1001	Personnel Exposure Investigation	8
RP-AA-700-1302	Operation of Portable Neutron Monitors	1
IC-CP-02-0202	Calibration of the Eberline ASP-2E with Remball NRD	1

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
RA 2014-1818	ALARA/Occupational Dose Assessment	September 30, 2015

Condition Reports (CRs)

2012-08108	2014-06027	2014-06253	2015-06197	2015-08905
2015-11674	2015-12568	2015-12568		

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
NCS-14-002	Exelon Neutron & Tissue Equivalent Proportional Counter Equivalent	October 28, 2014
	Part 61 Waste Streams	January 20, 2015
RP-AA-203-1001	Personnel Exposure Investigations	April – May 2015

Section 4OA1: Performance Indicator Verification

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
LS-AA-2090	Monthly Data Elements for NRC Reactor Coolant System (RCS) Specific Activity	4
LS-AA-2001	Collecting and Reporting of NRC Performance Indicator Data	14
LS-AA-2200	Mitigating System Performance Index Data Acquisitions and Reporting	5

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MSPI	Mitigating System Performance Index	0

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Chemistry Logs and Data Sheets	
	Control Room Logs	
	MSPI Derivation Reports for RHR Unavailability October 2014 through September 2015	
	MSPI Derivation Reports for RHR Unreliability October 2014 through September 2015	
	NRC MSPI for FCS Residual Heat Removal through September 2015	
	MSPI Derivation Reports for EDG Unavailability October 2015 through September 2015	
	MSPI Derivation Reports for EDG Unreliability October 2014 through September 2015	
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7
	NRC MSPI for FCS Emergency AC Power System through 3 rd Quarter 2015	

Section 40A2: Problem Identification and ResolutionCondition Reports (CRs)

2014-05006	2014-07833	2014-8639	2014-15143	2015-12507
2015-12532	2015-13548	2015-5552		

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Apparent Cause Evaluation: Accumulation of Gas in CCW Pump Casing	
	OPPD Response to Generic Letter 2008-01 dated October 14, 2008	
	OPPD Closeout of Generic Letter 2008-01 dated August 10, 2010	
	OPPD Closeout of Generic Letter 2008-01 dated May 23, 2011	

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
Enercon Report OPP-026-PR- 001	Component Cooling Water System Gas Accumulation Evaluation	0
	Adverse Condition Monitoring Plans	
	Maintenance Rule System Performance Indicators	
	System Health Reports	
	Boric Acid Program Work-down Curve	
	Corrective Actions Backlogs	
	Operability Evaluation List	
	Plant Health Committee Documents	
	System Engineering Excellence Plan	

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

Condition Reports (CRs)

2013-18497	2013-18503	2013-19768	2014-14723	2015-01181
2015-11588	2015-12195	2015-11613		

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Emergency Action Level Criteria	
	Reactor Plant Event Notification Worksheets	October 2, 2015
	Notification of Unusual Event Press Release	October 2, 2015
EN 51439	Fort Calhoun Station Event Notification	October 2, 2015
	FCS Event Summary Report	October 3, 2015
EN 51487	Fort Calhoun Station Event Notification	October 27, 2015
TQ-FC-221- FO50	Operability Impact of Cross-tying Class and Non-class Piping Systems	
	US Nuclear Regulatory Commission Operations Center Event Report Number 51439	October 2, 2015

Section 40A5 Other Activities

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
LS-AA-114-1000	72.48 Resource Manual	0
LS-AA-114	Exelon 72.48 Review Process	1
RE-RR-DFS-0001	Prep for Fuel Loading Operations	7
RE-RR-DFS-0002	Dry Shielded Canister Sealing Operations	11
RE-RR-DFS-0003	Loaded DSC/TC from Auxiliary Building to ISFSI	11
RE-RR-DFS-0004	DSC from TC to HSM Transfer Operations	9
RE-RR-DFS-0006	Loaded DSC/TC from ISFSI to Auxiliary Building	7
OI-DFS-1	Operating Instruction Dry Fuel Storage System	1
OP-ST-SHIFT-001	Operations TS Required Shift Surveillance	121
RE-AD-0005	Fuel Selection and DSC Planning	2

Condition Reports

2015-02718	2015-04649	2015-04657	2013-08569	2013-11753	2013-12884
2013-12889	2013-12898	2013-14015	2013-14036	2013-21520	2014-12980
2015-04309	2015-09467	2013-04609	2013-04864	2013-06343	2013-13545
2013-22911	2014-14413	2015-08899	2013-12902	2013-14124	2013-15557
2013-21512	2014-12507	2014-12702	2014-12944	2014-12944	2014-13041
2014-13046	2014-13407	2015-01274	2015-02232	2015-02319	2015-02352
2015-02718	2015-04649				

72.48 Screens/Evaluations

EC 48788	EC 54667	EC 29295	EC 32591	EC 48488
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Other Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NUH003.0103	UFSAR or the Standardized NUHOMS HSM System	10
	Certificate of Compliance No. 1004 for NUHIMS System	9
	FCS ISFSI 10 CFR 72.212 Evaluation Report	1
	FCS ISFSI 10 CFR 72.212 Evaluation Report Att. B	1
UFHA-EA97-001	Updated Fire Hazards Analysis	19
13-NOS-079	ISFSI Audit Report NOSA-FCS-13-78	June 26, 2013
AR 62490	ISFSI Audit Report NOSA-FCS-14-11	October 29, 2014
M-20150717-3	ISFSI Quarterly Survey	July 17, 2015

RP-AA-214	2015 Area Dosimeter Worksheet	2015
RP-AA-214	2014 Area Dosimeter Worksheet	2014
RP-AA-214	2013 Area Dosimeter Worksheet	2013

Work Orders

468478	465905	460009	453580	532688	529760
526783	5211485	520908	512574	491322	488505
479139	475726	472786	516250	447425	512007
478242	468463	460818	451487	519596	515675
479280					

Other Documents

Title

Date

FCS Corrective Action Program Apparent Cause Analysis
Helium Mass Spectrometer Leak Detector Examination

January 15, 2014
June 24, 2014