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

January 18, 2017

Shane M. Marik, Site Vice President
and Chief Nuclear Officer
Omaha Public Power District
Fort Calhoun Station
Mail Stop FC-2-4
9610 Power Lane
Blair, NE 68008

SUBJECT: FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT 05000285/2016004

Dear Mr. Marik:

On December 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. On January 11, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

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

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

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

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

Enclosure:
Inspection Report 05000285/2016004
w/ Attachment:
1. Supplemental Information
2. Occupational Radiation Safety Inspection Document Request

FORT CALHOUN STATION – NRC INTEGRATED INSPECTION REPORT 05000285/2016004

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ADAMS ACCESSION NUMBER: ML17018A386

☒ SUNSI Review By: GMiller		ADAMS ☒ Yes ☐ No	☒ Non-Sensitive ☐ Sensitive	☒ Publicly Available ☐ Non-Publicly Available		Keyword: NRC-002	
OFFICE	SRI:DRP/D	ARI:DRP/D	C:DRS/EB1	C:DRS/EB2	C:DRS/OB	C:DRS/PSB2	TL:DRS/IPAT
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	50-285
License:	DPR-40
Report:	05000285/2016004
Licensee:	Omaha Public Power District
Facility:	Fort Calhoun Station
Location:	9610 Power Lane Blair, NE 68008
Dates:	October 1 through December 31, 2016
Inspectors:	S. Schneider, Senior Resident Inspector P. Voss, Senior Resident Inspector L. Brandt, Acting Resident Inspector P. Elkmann, Senior Emergency Preparedness Inspector S. Hedger, Operations Engineer J. O'Donnell, CHP, Health Physicist
Approved By:	Geoffrey B. Miller Chief, Project Branch D Division of Reactor Projects

Enclosure

SUMMARY

IR 05000285/2016004; 10/01/2016 – 12/31/2016; Fort Calhoun Station; Maintenance of Emergency Preparedness.

The inspection activities described in this report were performed between October 1 and December 31, 2016, by the resident inspectors at Fort Calhoun Station, inspectors from the NRC's Region IV office. One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. Additionally, NRC inspectors documented in this report three licensee-identified violations of very low safety significance (Green) or Severity Level IV. 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," dated April 29, 2015. Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. 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," dated July 2016.

Cornerstone: Emergency Preparedness

- Green. The inspector reviewed a self-revealed non-cited violation associated with Fort Calhoun Station's failure to provide radiological emergency response training to those who may be called upon to assist in an emergency, as required by 10 CFR 50.47(b)(15). Specifically, in December 2014, 10 shift managers and 6 Technical Support Center and Emergency Operations Facility staff, responsible for making and reviewing protective action recommendations, were not trained on Procedure EPIP-EOF-7, "Protective Action Recommendations," Revision 26, and flowchart EP-FC-111-AD-F-02, before they were implemented on December 23, 2014. As immediate corrective actions, the licensee issued a reading package covering the new protective action recommendation process to the 16 individuals who had not been trained. The issue was entered into the licensee's corrective action program as Condition Report CR-2015-08951.

  The failure to provide radiological emergency response training to those who may be called upon to assist in an emergency is a performance deficiency within the licensee's ability to foresee and correct. The performance deficiency was more than minor because it was associated with the procedure quality attribute of Emergency Prepardness Cornerstone and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015, and was determined to be of very low safety significance (Green) because it was a failure to comply, was not a risk significant planning standard function, was not a loss of the planning standard function, and was a degraded planning standard function. This finding had a cross-cutting aspect in the area of human performance associated with change management because the emergency preparedness department failed to identify all of the emergency response organization staff who required training on revisions to the process for making protective action recommendations [H.3]. (Section 1EP5)

Licensee-Identified Violations

Violations of very low safety significance (Green) or Severity Level IV 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

On October 1, 2016, the Fort Calhoun Station (FCS) was at 97.8 percent power following the commencement of a coastdown on September 29, 2016. On October 24, 2016, FCS completed a final shutdown of the plant to commence a defueling outage in support of the permanent decommissioning of the plant. On November 13, 2016, FCS issued the defueling certification letter to the NRC.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On November 3, 2016, the inspectors completed an inspection of the station's readiness for seasonal extreme weather conditions. The inspectors reviewed the licensee's adverse weather procedures for 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 three risk-significant systems that were required to be protected from cold weather:

- Intake Structure
- Raw Water
- Control Room Air Conditioning

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 the 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.

1R04 Equipment Alignment (71111.04)

Partial Walk-Down

a. Inspection Scope

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

- October 21, 2016, control room air conditioning and ventilation system
- October 23, 2016, raw water system following raw water pump AC-10B in-service test
- October 28, 2016, shutdown cooling system
- November 18, 2016, component cooling water system following maintenance on component cooling water pump AC-3C
- December 2, 2016, spent fuel pool cooling system

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

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

- October 9, 2016, control room, fire area 42
- October 9, 2016, cable spreading room, fire area 41
- November 1, 2016, containment, fire area 30
- November 15, 2016, room 69 ventilation area, fire area 20-7
- November 15, 2016, upper electrical penetration room, fire area 34B-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.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On October 18, 2016, the inspectors observed simulator training for an operating crew preparing for the upcoming plant shutdown. The crew performed the planned down power evolution leading into the shutdown while addressing abnormal conditions included by the evaluation staff. Specifically, the crew was evaluated addressing a malfunction with the chemical volume and control system during a boration, as well as a stuck turbine control valve on the main turbine. 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 training.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity or risk. The inspectors observed the operators' performance of the following activities:

- October 19, 2016, operators preparing for quarterly in-service test of raw water pump AC-10B
- October 20, 2016, operators completing containment wide range pressure instrument channel and core reactivity surveillance testing and adjusting nitrogen blanket pressure in the component cooling water expansion tank
- October 21, 2016, operators responding to a smoke detector alarm and reports of an acrid odor in one of the plant areas

- October 24, 2016, downpower maneuvers, manual trip, and post trip actions
- October 26, 2016, power operated relief valve low temperature low pressure surveillance test
- November 2, 2016, reactor coolant system drain down to lowered inventory
- November 4, 2016, reactor coolant system flood-up brief

In addition, the inspectors assessed the operators' adherence to plant procedures and other operations department policies.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed three 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 12, 2016, planned yellow risk during emergency diesel generator 1 testing
- October 26, 2016, planned yellow risk for power operated relief valve low temperature low pressure surveillance test
- November 4, 2016, planned yellow risk for heavy load lift over the reactor vessel

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

These activities constituted completion of three maintenance risk assessment inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

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

- October 4, 2016, operability determination of MasterPact breaker fail to close technical bulletin and impact on Fort Calhoun Station breakers
- November 22, 2016, functionality assessment of Allen-Bradley 700 RTC relay susceptibility to electromagnetic interference and radio frequency interference
- December 2, 2016, functionality assessment of component cooling water surge tank pressure and level control in manual versus automatic

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.

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

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 SSCs:

- October 7, 2016, penetration M-45 Type C local leak rate post-maintenance test
- October 20, 2016, control room air conditioning and air filtration system post-maintenance test
- November 17, 2016, component cooling water pump AC-3C post-maintenance test
- December 14, 2016, raw water system strainer AC-12B post-maintenance test

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests or reviewed the results 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 constituted completion of four post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

During the station's defueling outage that concluded on November 11, 2016, the inspectors evaluated the licensee's outage activities. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan prior to the outage
- Review and verification of the licensee's fatigue management activities
- Monitoring of shutdown and cooldown activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Observation and review of reduced-inventory activities
- Observation and review of fuel handling activities

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed seven risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service tests:

- October 13, 2016, raw water system Category C valve in-service test
- October 25, 2016, raw water pump AC-10B in-service test

Other surveillance tests:

- October 13, 2016, reactor coolant system flow rate determination by heat balance

- October 14, 2016, auxiliary feedwater pump FW-6 surveillance test
- October 20, 2016, emergency diesel generator 2 surveillance test
- October 26, 2016, power operated relief valve low temperature low pressure surveillance test
- November 3, 2016, personnel access lock o-ring seal 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 constituted completion of seven surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing (71114.02)

a. Inspection Scope

The inspector verified the adequacy of the licensee's methods for testing the primary and backup alert and notification system (ANS). The inspector interviewed licensee personnel responsible for the maintenance of the primary and backup ANS and reviewed a sample of corrective action system reports written for ANS problems. The inspector compared the licensee's alert and notification system testing program with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1; FEMA Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants;" and the licensee's current FEMA-approved alert and notification system design report, "Updated Design Report to FEMA for the Outdoor Public Warning System and Backup Alert and Notification," as approved in a letter from Mr. R. McCabe, Chief, Technological Hazards Branch, FEMA Region VII, dated December 17, 2012.

These activities constituted completion of one alert and notification system evaluation sample, as defined in Inspection Procedure 71114.02.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

a. Inspection Scope

The inspector verified that the licensee's emergency response organization on-shift and augmentation staffing levels were in accordance with the licensee's emergency plan commitments. The inspector reviewed documentation and discussed with licensee staff the operability of primary and backup systems for augmenting the on-shift emergency response staff to verify the adequacy of the licensee's methods for staffing emergency response facilities, including the licensee's ability to staff pre-planned alternate facilities. The inspector also reviewed records of emergency response organization augmentation tests and events to determine whether the licensee had maintained a capability to staff emergency response facilities within emergency plan timeliness commitments.

These activities constituted completion of one emergency response organization staffing and augmentation testing sample, as defined in Inspection Procedure 71114.03.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspector performed an on-site review of the Fort Calhoun Radiological Emergency Response Plan, Sections A, B, F, G, H, J, K, and O, and Appendix A, Revision 0; Procedure EP-FC-110-200, "Dose Assessment," Revision 0; and EP-FC-1001, Addendum 3, "Emergency Action Levels," Revision 2. These revisions:

- Removed references to the security department staffing the fire brigade
- Removed references to the Blair Industrial Park Co-op phone
- Replaced references to Stone and Webster Engineering Corporation with Tierney-Blair LLC
- Replaced references to the Fremont fire department with references to the Elkhorn Decontamination Center
- Added making initial notifications to the NRC to the shift technical advisor's duties
- Added satellite phones as required communication systems
- Reassigned the maintenance and replacement of radiation protection equipment inventories from emergency planning to the radiation protection department
- Revised the frequency of CPR training
- Implemented the utility revision of the Radiological Assessment System for Consequence Analysis (RASCAL) dose assessment program

- Revised external radiation levels in emergency action level E-HU1
- Revised procedure titles and procedure numbers throughout the document

These revisions were compared to their previous revisions; to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1; to NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6, dated November 2012; and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspector verified that the revisions did not decrease the effectiveness of the emergency plan. This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection.

These activities constituted completion of three emergency action level and emergency plan changes samples, as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

a. Inspection Scope

The inspector reviewed the following for the period November 2014 through November 2016:

- After-action reports for emergency classifications
- After-action evaluation reports for licensee drills and exercises
- Independent audits and surveillances of the licensee's emergency preparedness program
- Self-assessments of the emergency preparedness program conducted by the licensee
- Licensee evaluations of changes made to the Emergency Plan and Emergency Plan Implementing Procedures
- Drill and exercise performance issues entered into the licensee's corrective action program
- Emergency preparedness program issues entered into the licensee's corrective action program
- Maintenance records for equipment supporting the emergency preparedness program
- Emergency response organization and emergency planner training records

The inspector reviewed summaries of 356 corrective action program reports associated with emergency preparedness and selected 15 to review against program requirements, to determine the licensee's ability to identify, evaluate, and correct problems in accordance with the requirements of planning standard 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, Section IV.F. The inspector verified that the licensee accurately and appropriately identified and corrected emergency preparedness weaknesses during critiques and assessments.

The inspector reviewed summaries of 30 licensee evaluations of the impact of changes to the emergency plan and implementing procedures, and selected five to review against program requirements to determine the licensee's ability to identify reductions in the effectiveness of the emergency plan, in accordance with the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspector verified that evaluations of proposed changes to the licensee emergency plan appropriately identified the impact of the changes prior to being implemented.

These activities constituted completion of one sample of the maintenance of the licensee's emergency preparedness program, as defined in Inspection Procedure 71114.05.

b. Findings

Introduction. The inspector reviewed a self-revealed, Green, non-cited violation associated with Fort Calhoun Station's failure to provide radiological emergency response training to those who may be called upon to assist in an emergency, as required by 10 CFR 50.47(b)(15). Specifically, in December 2014, 10 shift managers and 6 Technical Support Center and Emergency Operations Facility staff members, responsible for making and reviewing protective action recommendations, were not trained on Procedure EPIP-EOF-7, "Protective Action Recommendations," Revision 26, and flowchart EP-FC-111-AD-F-02, before they were implemented on December 23, 2014.

Description. Fort Calhoun Station implemented Procedure EPIP-EOF-7, "Protective Action Recommendations," Revision 26, and associated flowchart EP-FC-111-AD-F-02 on December 23, 2014 (ML15023A126). The emergency preparedness department had previously determined that training on the procedure revision was required for emergency response organization personnel responsible for making or reviewing protective action recommendations made to offsite authorities for protecting the health and safety of the public. Emergency preparedness staff conducted two classroom training sessions for Technical Support Center and Emergency Operations Facility staff prior to implementing the procedure change, training 23 persons. The emergency preparedness department did not verify that all required individuals attended the training.

Subsequent to implementing Procedure EPIP-EOF-7, Revision 26, a senior reactor operator failed to correctly make a protective action recommendation during routine licensed operator training in the control room simulator. Following the operator's failure to correctly recommend protective actions, the licensee determined that six Technical Support Center and Emergency Operations Facility staff failed to attend the training on Procedure EPIP-EOF-7, and therefore, lacked training before the procedure was implemented. In addition, the licensee determined the emergency preparedness staff relied on the routine licensed operator training program to train the shift managers on the

revised procedure. As a result, none of the licensee's 10 shift managers (on-shift emergency coordinators) received the training. The licensee entered this issue into their corrective action program as Condition Report CR-2015-08951. As immediate corrective action, the licensee issued a reading package covering the new protective action recommendation process to the 16 individuals who had not been trained.

Analysis. The failure to provide radiological emergency response training to those who may be called upon to assist in an emergency is a performance deficiency within the licensee's ability to foresee and correct. The performance deficiency was more than minor because it was associated with the procedure quality attribute of Emergency Prepardness Cornerstone and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, personnel unfamiliar with procedures for making protective action recommendations may not make accurate or timely recommendations to protect the health and safety of the public. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015, and was determined to be of very low safety significance (Green) because it was a failure to comply, was not a risk significant planning standard function, was not a loss of the planning standard function, and was a degraded planning standard function. The planning standard function was degraded because training was only provided to 23 of 39 individuals requiring training. This finding had a cross-cutting aspect in the area of human performance associated with change management because the emergency preparedness department failed to do a thorough analysis of the emergency response organization staff who were required to be trained on revisions to the process for making protective action recommendations to offsite authorities [H.3].

Enforcement. Title 10 CFR 50.47(b)(15), requires that radiological emergency response training is provided to those who may be called upon to assist in an emergency. Contrary to above, on December 23, 2014, Fort Calhoun Station failed to provide radiological emergency response training to those who may be called upon to assist in an emergency. Specifically, the licensee failed to provide training to 16 emergency response organization staff on Procedure EPIP-EOF-7, "Protective Action Recommendations," Revision 26, and associated flowchart EP-FC-111-AD-F-02. The licensee restored compliance by issuing a reading package covering the new protective action recommendation process to the 16 persons who had not been trained in December 2014 and verified that each person reviewed the package. Because this violation is of very low safety significance (Green) and was entered into the licensee's corrective action program as Condition Report CR-2015-08951, this violation is being treated as a non-cited violation in accordance with Section 2.3.2.a of the NRC Enforcement Policy. (NCV 05000285/2016004-01, "Failure to Provide Training on Changes to Protective Action Recommendation Procedures")

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

The inspector assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspector performed this portion of the attachment during the defueling outage in order to directly observe the licensee's ALARA process activities, including planning, implementation of radiological work controls, execution of work activities, and ALARA review of work-in-progress. During the inspection, the inspector interviewed licensee personnel, reviewed licensee documents, and evaluated licensee performance in the following areas:

- Implementation of ALARA and radiological work controls. The inspector observed pre-job briefings, reviewed planned radiological administrative, operational, and engineering controls, and compared the planned controls to field activities.

- Radiation worker and radiation protection technician performance during work activities performed in radiation areas, airborne radioactivity areas, or high radiation areas.

- Problem identification and resolution for ALARA and radiological work controls. The inspector reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of two of the five required samples of the occupational ALARA planning and controls program, as defined in Inspection Procedure 71124.02.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspector evaluated whether the licensee controlled in-plant airborne radioactivity concentrations consistent with ALARA principles and that the use of respiratory protection devices did not pose an undue risk to the wearer. During the inspection, the inspector interviewed licensee personnel, walked down various areas in the plant, and reviewed licensee performance in the following areas:

- Engineering controls, including the use of permanent ventilation systems to control airborne radioactivity. The inspector evaluated installed ventilation systems, including review of procedural guidance, verified the systems were

used during high-risk activities, and verified airflow capacity, flow path, and filter/charcoal unit efficiencies. Additionally, the inspector evaluated the licensee's airborne monitoring protocols, including verification that alarms and set points were appropriate.

- Use of respiratory protection devices, including an evaluation of the licensee's respiratory protection program for use, storage, maintenance, and quality assurance of National Institute for Occupational Safety and Health (NIOSH) certified equipment, air quality and quantity for supplied-air devices and self-contained breathing apparatus (SCBA) bottles, qualification and training of personnel, and user performance.

- Self-contained breathing apparatus for emergency use, including the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, hydrostatic testing of SCBA bottles, status of SCBA staged and ready for use in the plant including vision correction, mask sizes, etc., SCBA surveillance and maintenance records, and personnel qualification, training, and readiness.

- Problem identification and resolution for airborne radioactivity control and mitigation. The inspector reviewed audits, self-assessments, and corrective action documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the four required samples of the in-plant airborne radioactivity control and mitigation program, as defined in Inspection Procedure 71124.03.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

a. Inspection Scope

The inspector 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 inspector interviewed licensee personnel, walked down various portions of the plant, and reviewed licensee performance in the following areas:

- Source term characterization, including characterization of radiation types and energies, hard-to-detect isotopes, and scaling factors.

- External dosimetry including National Voluntary Laboratory Accreditation Program (NVLAP) accreditation, storage, issue, use, and processing of active and passive dosimeters.

- Internal dosimetry, including the licensee's use of whole body counting and dose assessments based on airborne monitoring.

- Special dosimetry situations, including declared pregnant workers, dosimeter placement, and neutron dose assessment.

- Problem identification and resolution for occupational dose assessment. The inspector reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the five required samples of the occupational dose assessment program, 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, 2015 through September 30, 2016, 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, 2015 through September 30, 2016, 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, 2015 through September 30, 2016, 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.

.4 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspector reviewed selected drill, exercise, and training sessions conducted between April 2015 and September 2016 to verify the accuracy of the licensee's data for classification, notification, and protective action recommendation opportunities. The inspectors reviewed a sample of the licensee's completed classifications, notifications, and protective action recommendations to verify their timeliness and accuracy. The inspector used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the drill/exercise performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspector reviewed licensee records for participation in drill, exercise, and training sessions conducted between April 2015 and September 2016 to verify the accuracy of the licensee's data for drill participation opportunities. The inspector verified that all

members of the licensee's emergency response organization (ERO) in the identified key positions had been counted in the reported performance indicator data. The inspector reviewed the licensee's basis for reporting the percentage of ERO members who participated in a drill. The inspector reviewed drill attendance records and verified a sample of those reported as participating. The inspector used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the emergency response organization drill participation performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.6 Alert and Notification System Reliability (EP03)

a. Inspection Scope

The inspector reviewed the licensee's records of alert and notification system tests conducted between April 2015 and September 2016 to verify the accuracy of the licensee's data for siren system testing opportunities. The inspector reviewed procedural guidance on assessing alert and notification system opportunities and the results of periodic alert and notification system operability tests. The inspector used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the alert and notification system reliability 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 constituted completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

In NRC Inspection Report 05000285/2016002, the inspectors documented a continuing adverse trend in equipment reliability at Fort Calhoun Station. The inspectors reviewed equipment reliability challenges in 2016 through the fourth quarter. These challenges resulted in equipment unavailability, unplanned technical specification entries, and operator burdens. Examples of equipment reliability issues during 2016 included a chemical and volume control system leak in January, a component cooling water pump motor failure in February, and a high pressure safety injection pump suction valve weld failure in March. In 2016, the licensee continued to reduce backlogs in open operability determinations and temporary configuration changes. In addition, the licensee's plant health committee continued to focus on their Top 10 equipment list to resolve critical items. The inspectors have determined that the licensee's progress in improving equipment reliability at the Fort Calhoun Station is sufficient to warrant closure of this trend.

c. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000285/2016-002-00, "Unanalyzed Condition Shutdown Heat Exchanger Isolations"

a. Inspection Scope

On May 10, 2016, the licensee discovered an unanalyzed condition during scheduled maintenance on the shutdown cooling heat exchanger valves. As part of the maintenance, HCV-484, Shutdown Heat Exchanger AC-4A Component Cooling Water Outlet Valve, and HCV-481, Shutdown Cooling Heat Exchanger AC-4B Component Cooling Water Inlet Valve, were failed open which rendered both valves inoperable. Under these conditions, with the assumed single failure loss of DC control power during a loss of coolant accident (LOCA), component cooling water (CCW) would be allowed to flow through both shutdown cooling heat exchangers, effectively reducing CCW system flow to the containment air cooling units. These conditions are not assumed under plant

design basis calculations and placed the plant in an unanalyzed condition. It has not been demonstrated that the CCW system would adequately perform its design function of providing a cooling medium for the containment atmosphere under LOCA conditions with CCW flow diverted through both shutdown cooling heat exchangers. With two containment air cooling units inoperable, Technical Specification 2.4, "Containment Cooling," does not provide an associated action; therefore, Technical Specification 2.0.1 applies, which requires the unit to be shut down within 6 hours. Upon completion of the maintenance activity, both valves were returned to service which eliminated the condition. The licensee conducted an extent of condition review and identified that they had created this unanalyzed condition six times within the last 3 years and had exceeded the Technical Specification 2.0.1 6-hour shutdown action statement on March 8, 2016, April 21, 2016, and May 10, 2016.

The NRC inspectors reviewed the details of this condition including corrective action documents, apparent cause analyses, system descriptions and drawings, and procedures. Based on a review of the condition, the inspectors determined that during the maintenance periods, the licensee was in violation of Technical Specification 2.0.1, which requires the unit to be shut down within 6 hours in the event a limiting condition for operation and/or associated action requirement cannot be satisfied because of circumstances in excess of those addressed in the specification. On March 8, 2016, April 21, 2016, and May 10, 2016, the licensee operated in the unanalyzed condition for longer than 6 hours and did not shut down the unit.

This LER is closed.

b. Findings

This violation was identified by the licensee and is discussed in further detail in Section 4OA7 of this report.

.2 (Closed) Licensee Event Report 05000285/2016-002-01, "Unanalyzed Condition Shutdown Heat Exchanger Isolations"

a. Inspection Scope

This licensee event report (LER) described additional, amplifying information to that contained in LER 2016-002-00, issued on July 7, 2016. The original LER described an unanalyzed condition that was discovered as a result of maintenance on two shutdown cooling heat exchanger valves. The inspectors identified that the licensee failed to include all applicable reporting codes per 10 CFR 50.73 when the licensee submitted the original LER. Specifically, when the original LER was submitted, the 10 CFR 50.73(a)(2)(i)(B) reporting criterion was not checked to indicate that the unanalyzed condition was also a condition prohibited by the plant's technical specifications. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section 2 of the Enforcement Policy. This violation was placed into the licensee's corrective action program as CR 2016-07637. This revision to the original LER restores compliance with 10 CFR 50.73 and also provides clarification on the safety significance of the unanalyzed condition.

This LER is closed.

b. Findings

No findings were identified.

.3 (Closed) Licensee Event Report 05000285/2016-003-00, "Unplanned Turbine Trip during DCS Modification due to Failure to Identify and Disable the Transmitter Deviation Based Trip"

a. Inspection Scope

On June 22, 2016, the licensee experienced an automatic turbine trip which resulted in an automatic reactor protective system (RPS) actuation and reactor trip. During follow-up of the event, the licensee discovered that the trip occurred during post-modification testing activities on a turbine emergency trip system pressure loop trip. The licensee initiated a root cause evaluation to evaluate the cause of the event. The licensee determined that a modification activity that was intended to eliminate a single point vulnerability in the emergency trip system pressure loop had been inappropriately implemented and had not undergone necessary reviews and validation during the modification planning process. As a result, engineering and operations personnel had failed to identify and disable a transmitter deviation-based trip during post-maintenance testing activities. The testing configuration triggered the two transmitters-in-deviation trip for the emergency trip system loop and initiated the turbine trip. The licensee's evaluation concluded that the root cause was associated with organizational weaknesses with the maintenance, implementation, and challenging of the emergent work process. Specifically, shift management failed to set and enforce standards related to the emergent work process. Corrective actions included creation of improved standards for engineering and operations personnel during work on emergent work packages and technical engineering products.

The licensee reported this issue at the time of the event under 10 CFR 50.72(b)(2)(iv)(B) as a 4-hour report for an RPS actuation while the reactor was critical, and under 50.72(b)(3)(iv)(A) as an 8-hour report for a valid specified system actuation (RPS). In addition, on August 22, 2016, the licensee reported the event under 10 CFR 50.73(a)(2)(iv)(A), as a licensee event report (LER) for a valid specified system actuation (RPS). The inspectors reviewed the root cause evaluation, the corrective actions, and the LER for the event to determine whether the causal analysis was thorough, the corrective actions appropriately addressed the condition and causes, and the appropriate NRC reporting requirements were met.

This LER is closed.

b. Findings

One finding associated with this event was previously documented in the second quarter resident inspector NRC Integrated Inspection Report (05000285/2016002-02, "Failure to Develop Adequate Procedures for Post-Modification Testing"). No additional findings were identified.

.4 (Closed) Licensee Event Report 05000285/2016-004-00, "Unanalyzed Condition for Potential Tornado-Borne Missile Impact to the Raw Water System"

a. Inspection Scope

On August 25, 2016, the licensee identified that a tornado missile strike on diesel-driven fire water pump FP-1B or associated piping had not been addressed during the 2013 tornado missile project. As such, a missile strike affecting pump FP-1B or its associated piping could cause a larger volume of water to enter the raw water pump vault than had previously been analyzed. An operability evaluation was conducted and compensatory measures were implemented to disable pump FP-1B and isolate associated piping upon entering a severe thunderstorm or tornado watch per their Abnormal Operating Procedure AOP-01, "Acts of Nature."

The NRC inspectors reviewed the details of this condition including corrective actions and compensatory measures implemented to maintain operability. Based on review of the condition, the inspectors determined that the licensee was previously ineffective in implementing corrective actions to address all missile hazards that could impact safety-related equipment when this was originally identified as a concern in 2013. Specifically, the vulnerability to a missile strike upon pump FP-1B and associated piping was discussed during the 2013 tornado missile project. However, the postulated tornado missile strike on the intake structure which impacts the pump and associated piping was not addressed nor were corrective actions taken to protect the raw water pump vault at that time.

This LER is closed.

b. Findings

This violation was identified by the licensee and is discussed in further detail in Section 4OA7 of this report.

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

4OA6 Meetings, Including Exit

Exit Meeting Summary

On November 10, 2016, the inspector presented the radiation safety inspection results to Mr. T. Tierney, Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspector had been returned or destroyed.

On December 2, 2016, the inspector presented the results of the onsite inspection of the licensee's emergency preparedness program to Mr. S. Marik, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On January 11, 2017, the inspectors presented the inspection results to Mr. S. Marik, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

4OA7 Licensee-Identified Violations

The following licensee-identified violations of NRC requirements were determined to be of very low safety significance (Green) or Severity Level IV and meet the NRC Enforcement Policy criteria for being dispositioned as non-cited violations:

- Technical Specification 2.0.1 requires the unit to be shut down within 6 hours in the event a limiting condition for operation and/or associated action requirement cannot be satisfied because of circumstances in excess of those addressed in the specification. Contrary to the above, the licensee failed to enter Technical Specification 2.0.1 and take the prescribed actions on several occasions when shutdown cooling heat exchanger valves were opened which impacted component cooling water (CCW) flow to the containment air cooling units under certain accident conditions.

  On May 10, 2016, an unanalyzed condition was discovered during scheduled maintenance on the shutdown cooling heat exchanger valves. As part of the maintenance, HCV-484, Shutdown Heat Exchanger AC-4A Component Cooling Water Outlet Valve, and HCV-481, Shutdown Cooling Heat Exchanger AC-4B Component Cooling Water Inlet Valve, were failed open which rendered both valves inoperable. Under these conditions, with the assumed single failure loss of DC control power during a loss of coolant accident (LOCA), CCW would be allowed to flow through both shutdown cooling heat exchangers, effectively reducing CCW system flow to the containment air cooling units. These conditions are not assumed under plant design basis calculations and placed the plant in an unanalyzed condition. It has not been demonstrated that the CCW system would adequately perform its design function of providing a cooling medium for the containment atmosphere under LOCA conditions with CCW flow diverted through the shutdown cooling heat exchangers. With two containment air cooling units inoperable, Technical Specification 2.4, does not provide an associated action; therefore, Technical Specification 2.0.1 applies. Upon completion of the maintenance activity, both valves were returned to service which eliminated the condition. The licensee conducted an extent of condition review and identified that they had created this unanalyzed condition six times within the last 3 years and had exceeded the Technical Specification 2.0.1 6-hour shutdown action statement on March 8, 2016; April 21, 2016; and May 10, 2016. In addition, the licensee determined this condition was first identified on February 3, 2015, in Condition Report 2015-01388. Procedure TDB-VIII, “Equipment Applicability Guidance,” Revision 64, incorrectly stated the valves had a required safety function in the open direction. The licensee initiated procedure change EC-68088 on September 26, 2015, to correct the procedure; however, the proposed change did not accurately reflect the safety function of the valves to remain closed for all LOCA conditions. This procedure change was still under review on May 10, 2016. The failure to promptly correct Procedure TDB-VIII was a contributing cause of the violation.

  The violation is more than minor because it is associated with the configuration control attribute of the Mitigating Systems Cornerstone. On March 8, 2016; April 21, 2016; and May 10, 2016, the plant was placed in a condition prohibited by technical specifications

and exceeded the Technical Specification 2.0.1, 6-hour shutdown action statement. This adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. A senior reactor analyst qualitatively determined that this finding was of very low safety significance (Green) for increases in core damage frequency and large early release frequency because of the short exposure time of less than 3 days and because of the low frequency of events where a LOCA with an independent and coincidental loss of DC control power would occur. Therefore, this finding screens to Green. The licensee entered the issue into their corrective action program as Condition Reports 2016-05340 and 2016-04468.

- Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, though the licensee identified a potential vulnerability to raw water pumps from a missile hazard striking diesel driven fire pump FP-1B or associated piping during review of missile hazards during the 2013 tornado missile project, the licensee failed to evaluate this condition or specify a modification to the plant to protect the raw water pumps at that time. This was discovered on August 25, 2016, by the licensee during a design review. This finding is of very low safety significance (Green) considering compensatory measures that were put in place to disable pump FP-1B and isolate associated piping when severe weather is forecast and the very low probability of the postulated event. This issue was entered into the licensee's corrective action program as CR 2016-06972.

- Title 10 of the Code of Federal Regulations, Part 50.9(a), requires that information provided to the Commission by a licensee shall be complete and accurate in all material respects. Contrary to the above, on December 26, 2014, Fort Calhoun Station provided information to the Commission which was not complete and accurate in all material respects. Specifically, a license amendment request (ML14365A123) to adopt a scheme of emergency action levels based on Nuclear Energy Institute Document 99-02, Revision 6, contained inaccurate information about the characteristics of the cask used in the licensee's Independent Spent Fuel Storage Installation and, as a result, incorrect external radiation levels were incorporated into emergency action level E-HU1. Subsequently, while preparing another emergency action level submittal, the emergency preparedness staff discovered the incorrect information that had previously been submitted. The issue was determined to be a Severity Level IV violation of NRC requirements, in accordance with Section 6.9 of the Enforcement Policy, dated November 1, 2016, because the inaccurate information would not have caused the NRC to reconsider a regulatory position or undertake substantial further inquiry. The issue was documented in the licensee's corrective action program as Condition Report CR-2016-08400. Because the Severity Level IV violation has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

C. Beck, Director, Training, (Acting)
R. Beck, Manager Chemistry, Environmental, and Radwaste
B. Blome, Manager, Regulatory Assurance
E. Breault, Supervisor, Radiation Protection
D. Brehm, Supervisor, Radiation Protection
C. Cameron, Principal Regulatory Specialist, Licensing
J. Cate, Manager, Engineering Projects
H. Childs, Manager, Security
B. Currier, Director, Site Engineering
S. Dixon, Respiratory Specialist, Radiation Protection
A. Hansen, Licensing Engineer
R. Hugenroth, Manager, Nuclear Oversight
T. Leaf, Director, Operations
D. Little, Dosimetry Specialist, Radiation Protection
S. Marik, Vice President and Chief Nuclear Officer
E. Matzke, Senior Licensing Engineer
J. Mise, Engineer, Systems Engineering
J. Musser, Superintendent, Operations
B. Pearson, Supervisor, Radiation Protection
E. Plautz, Manager, Emergency Planning
J. Shuck, Manager, Systems Engineering
N. Thompson, Engineer, System Engineering
T. Tierney, Plant Manager
T. Uehling, Plant Manager, Decommissioning
C. Verdoni, Operation Training
B. Ward, Nuclear Engineer, Rapid Response
D. Weaver, Director, Work Management
D. Whisler, Manager, Radiation Protection

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000285/2016004-01	NCV	Failure to Provide Training on Changes to Protective Action Recommendation Procedures (Section 1EP5)

Closed

05000285/2016002-00	LER	Unanalyzed Condition Shutdown Heat Exchanger Isolations (Section 4OA3)
05000285/2016002-01	LER	Unanalyzed Condition Shutdown Heat Exchanger Isolations (Section 4OA3)
05000285/2016003-00	LER	Unplanned Turbine Trip during DCS Modification due to Failure to Identify and Disable the Transmitter Deviation Based Trip (Section 4OA3)
05000285/2016004-00	LER	Unanalyzed Condition for Potential Tornado-Borne Missile Impact to the Raw Water System (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Miscellaneous Documents

Title	Revision
FCS Snow Removal Plan	
Plant System Readiness Review – Control Room HVAC	17
Plant System Readiness Review – Spent Fuel Pool Cooling	17
Plant System Readiness Review – Raw Water	17
Plant System Readiness Review – Station XFMRs, 4160 & 480V System	17
Plant System Readiness Review – 1251/3451 Switchyard	17
Plant System Readiness Review – Auxiliary Steam and Boiler	17
Plant System Readiness Review – Component Cooling Water	17

Procedures

Number	Title	Revision
AOP-01	Acts of Nature	48
OI-EW-1	Attachment 1 – Cold Weather Preparation	34
OP-AA-108-111-1001	Severe Weather and Natural Disaster Guidelines	15
SA-AA-2114	Winter Safety	3
WC-AA-107	Seasonal Readiness	17

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Section 1R04: Equipment Alignment

Miscellaneous Documents

Number	Title	Revision
11405-M-10	Auxiliary Coolant Component Cooling System Flow Diagram, Sheet 2	21
11405-M-11	Auxiliary Coolant Spent Fuel Pool Cooling System Flow Diagram	59
11405-M-97	Miscellaneous Heating, Ventilating & Air Conditioning Flow Diagram P&ID, Sheet 1	66
11405-M-97	Miscellaneous Heating, Ventilating & Air Conditioning Flow Diagram P&ID, Sheet 2	7
11405-M-97	Miscellaneous Heating, Ventilating & Air Conditioning Flow Diagram P&ID, Sheet 3	2
ACPS 16-041	Abnormal Component Position Sheet 16-041	0
ACPS 16-124	Abnormal Component Position Sheet 16-124	0
D-4768	Primary Plant Simplified Flowpath Diagram	8
E-23866-210-130	Composite Flow Diagram Safety Injection and Containment Spray System P&ID	81
E-4108	Control Room Air Conditioners VA-46A & VA-46B Interconnection Diagram	3
USAR 9.3	Shutdown Cooling System	14
USAR 9.10	Heating, Ventilating & Air Conditioning System	38

Procedures

Number	Title	Revision
OI-CC-1	Component Cooling System Normal Operation	87
OI-SC-1	Shutdown Cooling Initiation	69
OI-SFP-1	Spent Fuel Pool Cooling Normal Operation	43
OI-VA-3	Control Room Ventilation System Normal Operation	47

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Section 1R05: Fire Protection

Miscellaneous Documents

Number	Title	Revision/Date
	Fire Watch Inspection Log	November 1, 2016
	Fire Watch Inspection Logs for Cable Spreading Room	October 9 - 17, 2016
A-59921	OPPD Fire Barrier Penetration Schedule	73
B-4342	Cable Trays Thru Walls of 11" or Greater Thickness Electrical Seal-Wall, Sheet 1	9
EA-97-001	Updated Fire Hazards Analysis	19
FPI 2016-07737	Fire Protection Impairment Permit for Fire Barrier Penetration Seal 70-W-2	October 12, 2016
NFPA 10	Standard for Portable Fire Extinguishers Handbook 2010	December 5, 2009
USAR 9.11	Fire Protection System	23

Procedures

Number	Title	Revision
AOP-06	Fire Emergency	30
EA-FC-91-022	9" Silicone Foam Penetration Seal Qualification	6
OP-AA-201-009	Control of Transient Combustible Materials	17
OP-ST-FP-0004	Battery Powered Smoke Detector Functional Test	9
SO-G-28	Station Fire Plan	93, 94

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2015-09202	2016-07700	2016-07711	2016-07737	2016-07805
2016-07865	2016-08050	2016-08055	2016-08059	2016-08220
2016-08221				

Work Orders

Number	Title	Date
562966	Install Containment Fire Extinguishers	October 2016
576917	Perform Monthly FP System Inspection (Week 4)	September 16, 2016

Work Orders

Number	Title	Date
579076	Perform Monthly FP System Inspection (Week 4)	October 14, 2016

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

Miscellaneous Documents

Number	Title	Revision/Date
	CCW Automatic to Manual Action NCV's Path Forward, CR 2014-11652-033 Response	November 16, 2016
	Control Room Logs	November 2, 2016
	Evaluation of Boric Acid Leakage (SI-2B, CR 2015-06869)	August 6, 2015
	Fort Calhoun Nuclear Station 2016 Defueling Shutdown Safety Plan	1
11405-M-10	Composite Flow Diagram, Auxiliary Coolant, Component Cooling System P&ID, Sheet COV	36
11405-M-42	Nitrogen, Hydrogen, Methane, Propane, and Oxygen Gas Flow Diagram P&ID, Sheet 1	98
D-4768	Primary Plant Simplified Flowpath Diagram	November 1, 2016
FC-1291	Makeup Flowpaths to the RCS	November 1, 2016
FCC28_09.0	Cycle 28 Coast-down Reactivity Maneuver	September 28, 2016
HU-AA-1211-F-03	IPA Briefing Worksheet for End of Life Shutdown	0
RQCT1633	Cycle 28 De-Boration and Coast Down Overview	August 29, 2016
TDB-III.42	Technical Data Book: Requirements for ECCS and Containment Cooling Equipment Operation in Mode 3, Transition Between Modes 3 and 4, and Modes 4 and 5	4
TDB-V.9	Shutdown Margin Worksheet	42
TDB-VI	Core Operating Limits Report	42

Procedures

Number	Title	Revision
AOP-06	Fire Emergency	29
EOP-00	Standard Post Trip Actions	33
EOP-01	Reactor Trip Recovery	16
OI-CC-1	Component Cooling System Normal Operations	87
OI-NG-1	Nitrogen System Normal Operation	37
OI-RC-2A	RCS Fill and Drain Operations	95, 96
OP-3A	Plant Shutdown	87
OP-4	Load Change and Normal Power Operation	52, 53
OP-ST-CCW-3008	Component Cooling Water Surge Tank Leakage Test	0
OP-ST-RW-3011	AC-10B Raw Water Pump Quarterly In-service Test	41
OP-ST-VA-0009	Containment Wide Range Pressure Channel Check	6
RE-ST-RX-0008	Shutdown Margin Verification During Hot Shutdown, Cold Shutdown or Refueling	6
RE-ST-RX-0009	Reactor Anomalies	7
SO-O-21	Shutdown Operations Protection Plan	57

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2014-09080	2014-11652	2016-07874	2016-08088

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Miscellaneous Documents

Title	Revision/Date
Equipment Out of Service Quantitative Risk Assessment Tool	
FCS Defueling Schedule	
FCS Shutdown Safety Plan	1
HLA Briefing Worksheet for PORV Low Temperature Low Pressure Exercise Test	October 25, 2016
Risk Screening/Mitigation Plan for OP-ST-DG-0001 (Diesel Generator 1 Check)	0

Procedures

Number	Title	Revision
ER-AA-600	Risk Management	7
ER-AA-600-1011	Risk Management Administrative Guidance	15
ER-AA-600-1024	EOOS Model Capability	0
ER-AA-600-1042	On-line Risk Management	10
OP-ST-DG-0001	Diesel Generator 1 Check	87
OP-ST-RC-0009	Reactor Coolant System Flow Rate Determination By Heat Balance	1
OP-ST-RC-3004	Power Operated Relief Valve (PORVs) Low Temperature Low Pressure Exercise Test (PCV-102-1 & PCV-102-2)	34
SA-AA-116-2124	Job Hazard Analysis	4
SO-G-28	Attachment 14, Shutdown Fire Risk Reduction Plan	94
SO-G-92	Conduct of Infrequently Performed Procedures	18
SO-G-123	Protected Equipment Program	9
SO-O-21	Shutdown Operations Protection Plan	57
WC-AA-104	Integrated Risk Management	24

Section 1R15: Operability Determinations and Functionality Assessments

Miscellaneous Documents

Number	Title	Revision
	Notification of 10 CFR Part 21 Condition, MasterPact Breaker Fail to Close	
50.59	Review of Compensatory Measures for CR 2016-07528	
LD-P21-02152016-1	Letter from NLI to FCS	2
P21-02152016	Part 21 Report	3
TB-12-007	Technical Bulletin, MasterPact Breakers Fail to Close	3
TB-16-001	Technical Bulletin, Allen-Bradley 700 RTC Ferrite Installation	1
Q1251.0	Qual Tech NP Report, Electromagnetic Capability Test Report for an Allen-Bradley Timing Relay P/N: 700-RTC02200U1	0

Condition Reports

2016-07587 2016-07657

Section 1R19: Post-Maintenance Testing

Miscellaneous Documents

Number	Title	Revision
11405-E-5	480 Volt Auxiliary Power One Line Diagram	32
11405-M-12	Primary Plant Sampling System Flow Diagram, Sheet 1	68
11405-M-97	Miscellaneous Heating, Ventilating and Air Conditioning	66
11405-M-100	Raw Water Flow Diagram	105
A-5403	AC-12A/B Raw Water Strainer Backwash Piping Floor Penetration Replacement	3
TS 2.6	Containment System	
TS 3.5	Containment Tests	
USAR 5.1	Containment Structure	4
USAR 5.9	Containment Penetrations	16
USAR 9.10	Heating, Ventilating and Air Conditioning System	38

Procedures

Number	Title	Revision
EM-PM-EX-1000	480 Volt Motor Inspection	28
IC-CP-01-6692B	Calibration & Functional Test of Humidity Control Instrumentation & Heaters Associated with Control Room Fresh Air Filter VA-64B	10
IC-ST-AE-3145	Type C Local Leakage Rate Test of Penetration M-45	20, 21
MA-FC-716-008	Work Package Planning Briefing & Transition Form for WO 592286	0
OP-FC-109-101	Clearance Requester Checklist for WO 592286	1
OP-ST-CR-0001B	Control Room Filtered Circuit Operation (for VA-64B)	3
OP-ST-RW-3031	AC-10D Raw Water Pump Quarterly In-Service Test	45

Condition Reports

2016-07722	2016-07745	2016-07784	2016-07787	2016-08253
2016-08560	2016-08636			

Work Orders

Number	Title
546312	Task 1, Raw Water Strainer AC-12B Leak Test Link Seal on Backwash Discharge Line
572738	VA46B: Inspect, Leak Test, Sample Oil, Lubricate Bearings
575801	Task 1, Raw Water Strainer AC-12 Change and Sample Oil
577344-01	Clean, Inspect and Megger Motor for AC-3C
577459	VA-46-COND: Clean Condenser Coils (August)
579575	Calibrate Loop F-6692B per IC-CP-01-6692B
581294	Task 1, Raw Water Strainer AC-12B Adjust Packing to Stop Leakage
592286	HCV-2504B: Perform Marked Up Copy of IC-ST-AE-3145
598658	Task 1, Raw Water Strainer AC-12B Inspect Media and Adjust Basket Clearances

Section 1R20: Refueling and Other Outage Activities

Miscellaneous Documents

Number	Title	Revision
	2016 Shutdown Hot Soak Activity Decision Criteria	
	Boric Acid Flow Path Drawing	
	Daily Outage Control Center Turnover Sheets	
	Defueling Outage Schedule	
	Fort Calhoun Nuclear Station 2016 Defueling Shutdown – Shutdown Safety Plan	1
	Make-up Flow Path Drawing	
	Reactivity Maneuver Guidance Sheets	
	Shutdown Cooling Flow Path Drawing	
HU-AA-1211-F-02	HLA Briefing Worksheet	0
HU-AA-1211-F-03	IPA Briefing Worksheet, End of Life Shutdown October 2016	0
OP-AP-300-1003	PWR Reactivity Maneuver	7
OP-FC-108-117-1001	Spent Fuel Storage Pools Heat-Up Rate With Loss of Normal Cooling	3
OP-ST-RC-3004	Power Operated Relief Valves (PORVs) Low Temperature Low Pressure Exercise Test (PCV-102-1 and PCV-102-2)	34

Miscellaneous Documents

Number	Title	Revision
RE-ST-RX-0008	Shutdown Margin Verification During Hot Shutdown, Cold Shutdown or Refueling	6
TDB-III.42	Technical Data Book	4
TS 2.8.1	Refueling Shutdown	188
TS 2.8.1(1)	Boron Concentration	188

Procedures

Number	Title	Revision
EOP-00	Standard Post Trip Actions	33
EOP-01	Reactor Trip Recovery	16
IC-CP-01-0106	Calibration of Pressurizer Wide Range Level Loop L-106	7
IC-CP-01-0119	Calibration of Reactor Coolant Shutdown Narrow Range Level, Loop L-119	12
IC-CP-01-0197	Calibration of Reactor Coolant Shutdown Wide Range Level, Loop L-197	12
OI-CH-3	Chemical and Volume Control System Normal Operation of Volume Control Tank	35
OI-CH-4	Chemical and Volume Control System Makeup Operations	48
OI-CO-4	Containment Closure	55
OI-RC-2A	RCS Fill and Drain Operations	95
OI-SC-1	Shutdown Cooling Initiation	69
OP-3A	Plant Shutdown	88
OP-4	Load Change and Normal Power Operation	52
OP-4	Attachment 2 – Power Reduction	53
OP-12	Fueling Operations	73
SO-G-28	Attachment 14 – Shutdown Fire Risk Reduction Plan	94
SO-G-92	Conduct of Infrequently Performed Procedures	18
SO-O-21	Shutdown Operations Protection Plan	57
WC-AA-104	Integrated Risk Management	24

Condition Reports

2016-07662	2016-07734	2016-07823	2016-07825	2016-07832

Condition Reports

2016-07874	2016-07929	2016-07932	2016-07935	2016-07966
2016-07968	2016-07986	2016-07990	2016-07991	2016-07995
2016-07997	2016-08001	2016-08020	2016-08064	2016-08072
2016-08078	2016-08088	2016-08094	2016-08097	2016-08106
2016-08107	2016-08113	2016-08120	2016-08128	2016-08130
2016-08135	2016-08138	2016-08139		

Section 1R22: Surveillance Testing

Miscellaneous Documents

Number	Title	Revision/Date
	Fort Calhoun IST Program Valve Component Information	
11405-E-334	Elementary Diagram: Raw Water Strainer, Sheet 3	21
11405-M-100	Raw Water Flow Diagram P&ID	105
11405-M-259	Flow Diagram Potable & Service Water System P&ID, Sheet 2	33
O-MPS-90-035	Justification of LTOP Requirements for Fort Calhoun Station: Final Results	April 30, 1990
PED-FC-89-241B	Evaluation of Valve Stroke Times for Reactor Coolant System	June 29, 1989
PED-FC-90-1519	PORV Opening Time Requirement	May 2, 1990
TDB-III.7.a	RCS Pressure and Temperature Limits	25
TDB-III.7.d	RCS Pressure and Temperature Limits	8
TDB-III.32	Technical Data Book: AC-10B Pump Curve	26
TS 2.3	Emergency Core Cooling System	
TS 3.5	Containment Test	
TS 3.9	Auxiliary Feedwater System Surveillance Requirements	
USAR 4.2	Reactor Coolant System Design Basis	14
USAR 4.3	Reactor Coolant System Component and System Design and Operation	42
USAR 4.5	Reactor Coolant System Tests and Inspections	17
USAR 5.10	Structures: Containment Tests and Inspection	6
USAR 7.3.2.1	Auto-Start of Diesel Generators	16
USAR 8.4	Electrical Systems: Emergency Power Sources	20

Miscellaneous Documents

Number	Title	Revision/Date
USAR 9.4	Auxiliary Feedwater System	21
USAR 9.8	Raw Water System	36

Procedures

Number	Title	Revision
IC-ST-RW-3001	Raw Water System Category C Valve In-service Test	13
OI-AFW-1	Auxiliary Feedwater Actuation System Normal Operation	85
OI-RW-1	Raw Water System Normal Operation	111
OP-ST-AE-0001	Personnel Access Lock (PAL) O-Ring Seal Test	23
OP-ST-AFW-0007	Auxiliary Feedwater Pump FW-6 Operability Test	4
OP-ST-DG0002	Diesel Generator 2 Check	78
OP-ST-RC-3004	Power Operated Relief Valves (PORVs) Low Temperature Low Pressure Exercise Test (PCV-102-1 and PCV-102-2)	34
OP-ST-RW-3011	AC-10B Raw Water Pump Quarterly In-service Test	41
SO-G-23	Surveillance Test Program	67

Condition Reports

2016-07727 2016-07755 2016-07866

Work Orders

Number	Title
559279	Personnel Access Lock (PAL) O-Ring Seal Test

Section 1EP2: Alert and Notification System Testing

Procedures and Documents

Number	Title	Revision/Date
	Alert Notification System Annual Inspection	October 14, 2016
	Letter from Mr. R.L. McCabe, Chief, Technological Hazards Branch, FEMA Region VII to Mr. M. Schouten, Administrator, Iowa Homeland Security and Emergency Management	December 17, 2012

Procedures and Documents

Number	Title	Revision/Date
	Letter from Mr. R.L. McCabe, Chief, Technological Hazards Branch, FEMA Region VII to Mr. A. Berndt, Assistant Director, Nebraska Emergency Management Agency	December 17, 2012
	Letter from Mr. R.L. McCabe, Chief, Technological Hazards Branch, FEMA Region VII to Mr. J. Bousum, Manager, Emergency Preparedness, Fort Calhoun Station	July 15, 2013
EP-FC-121-AD-F-03	Alert Notification System Silent Test	0
EP-FC-121-AD-F-04	Alert Notification System Growl Test	0, 1
EP-FC-121-AD-F-05	Alert Notification System Complete Cycle Test	0, 1
EP-FC-121-AD-F-08	Alert Notification System Monthly Battery Test	0
EP-FC-121-AD-F-07	Alert Notification System Annual Inspection	0
2015-138	Alert Notification System Annual Inspection	October 29, 2015

Condition Reports

2015-00065	2015-00532	2015-01363	2015-01916	2015-08819
2016-07295				

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

Miscellaneous Documents

Number	Title	Date
EP-15-007	Evaluation Report for the Call-In Drill conducted March 14, 2015	March 18, 2015
EP-15-011	Evaluation Report for the Call-In Drill conducted June 18, 2015	June 29, 2015
EP-15-018	Evaluation Report for the Call-In Drill conducted September 12, 2015	September 15, 2015
EP-15-022	Evaluation Report for the Call-In Drill conducted December 10, 2015	December 14, 2015
EP-16-003	Evaluation Report for the Call-In Drill conducted February 26, 2016	February 26, 2016

Miscellaneous Documents

Number	Title	Date
EP-16-008	Evaluation Report for the Call-In Drill conducted June 13, 2016	June 14, 2016
EP-16-012	Evaluation Report for the Call-In Drill conducted September 26, 2016	September 27, 2016

Procedures

Number	Title	Revision
EP-FC-121-1001	Automated Call-Out System Maintenance	0, 1
EP-FC-122-F-13	Call-in Drill Checklist	0, 1
EP-FC-122-100-F-14	Drive-In Drill Checklist	0, 1

Section 1EP5: Maintenance of Emergency Preparedness

Miscellaneous Documents

Number	Title	Date
	Crisis Communication Plan for a Nuclear Plant Emergency	March 2016
	Evacuation Time Estimate Review Checklist	
	Evaluation Report for the Environmental Drill conducted September 6, 2016	September 7, 2016
	Evaluation Report for the Exercise conducted March 1, 2016	April 16, 2016
	Evaluation Report for the Exercise conducted July 26, 2016	August 23, 2016
	Evaluation Report for the PI Drill Series conducted September 2016	September 20, 2016
	Event Review Checklist	0
	Event Review Checklist for the Notification of Unusual Event on October 2, 2015	February 4, 2016
	Memorandum: Fort Calhoun Station Notification of Unusual Event Report from October 2, 2015	October 26, 2015
	NOS Objective Evidence Report, Emergency Preparedness, Offsite Agency Interface (2015 Audit)	
	NOS Objective Evidence Report, Emergency Preparedness, Offsite Agency Interface (2016 Audit)	

Miscellaneous Documents

Number	Title	Date
	50.54(q) Program Evaluation and Effectiveness Review, EP-FC-120-1001, Revision 3	October 11, 2016
	50.54(q) Program Evaluation and Effectiveness Review, EP-FC-124-AD-F-07, Revision 2	November 2, 2016
	50.54(q) Program Evaluation and Effectiveness Review, EP-FC-124-AD-F-04, Revision 3, and EP-FC-124-F-06, Revision 2	November 3, 2016
	50.54(q) Program Evaluation and Effectiveness Review, EP-FC-1001, Addendum 3, Emergency Action Levels for Fort Calhoun Station, Revision 2	November 17, 2016
2014-083	Review of the Crisis Communication Plan	December 31, 2014
2015-020	Review of the Crisis Communication Plan	December 31, 2015
2015-088	Evacuation Time Estimate Review Checklist	December 23, 2015
AR2014-1773	Benchmark, Everbridge Use and Implementation	April 3, 2015
AR2014-1775	Benchmark, ERO Training Integration and Continuity	February 3, 2015
AR2014-1793	Focused Area Self-Assessment, 2015 NRC EP Exercise Inspection Readiness FASA	June 26, 2015
AR2014-1794	Focused Area Self-Assessment, FCS Drill and Exercise Program	May 7, 2015
AR2015-1492	Check-In Self-Assessment, Annual EP Focus Area, ERP Staffing	September 30, 2016
AR2016-1487	Focused Area Self-Assessment, NRC Inspection Readiness Assessment	
EP-15-005	Evaluation Report for the Exercise conducted January 27, 2015	February 23, 2015
EP-15-008	Evaluation Report for the Exercise conducted March 17, 2015	April 13, 2015
EP-15-012	Evaluation Report for the Exercise conducted June 23, 2015	July 16, 2015
EP-15-016	Evaluation Report for the Exercise conducted August 4, 2015	
EP-15-019	Evaluation Report for the Exercise conducted September 22, 2015	October 22, 2015

Miscellaneous Documents

Number	Title	Date
EP-15-020	Evaluation Report for the Environmental Drill conducted December 8, 2015	December 8, 2015
EP-15-023	Evaluation Report for the Accountability Drill conducted December 30, 2015	January 19, 2016
Evaluation 16-35	50.54(q) Program Evaluation and Effectiveness Review, FCS Security Access Facility Relocation	April 29, 2016
NOSA-FCS-15-03	Emergency Preparedness Audit	April 8, 2015
NOSA-FCS-16-03	Emergency Preparedness Audit	April 29, 2016

Procedures

Number	Title	Revisions/Date
EP-F-121	Emergency Response Facilities and Equipment Readiness	0
EP-FC-1	Nuclear Policy, Emergency Preparedness	May 22, 2014
EP-FC-10	Emergency Preparedness Program Description	0
EP-FC-11	Operating Stations Emergency Preparedness Process Description	1
EP-FC-120	Emergency Plan Administration	2
EP-FC-120-1001	10 CFR 50.54(q) Change Evaluation	0, 1, 2, 3
EP-FC-120-1006	EP Reportability, Loss of Emergency Preparedness Capabilities	0, 1
EP-FC-120-F-05	Review and Update of RERP/EPIPs/OSC-1 EALs	0
EP-FC-120-F-13	Emergency Preparedness Expectations	0
EP-FC-120-F-19	Verify Minimum Staffing Capability	0
EP-FC-122	Drills and Exercise Program	0, 1
EP-FC-122-100-F-15	Assembly and Accountability Drill Checklist	0
EP-FC-122-100-F-16	Environmental Radiological Monitoring Drill Checklist	0
EP-FC-122-100-F-18	Health Physics Drill Checklist	0
EP-FC-122-100-F-19	Medical Emergency Drill Checklist	0

Procedures

Number	Title	Revisions/Date
EP-FC-124	Inventories and Surveillances	0, 1
EP-FC-125	Emergency Preparedness Self Evaluation Process	0
EP-FC-1001	Radiological Emergency Response Plan for Fort Calhoun Station	0
EP-FC-1101	Emergency Preparedness Fundamentals	0
EP-FC-1102	Emergency Response Organization Fundamentals	1
EP-FC-AD-F-04	Audit of the Emergency Plan	0

Condition Reports

2014-15107	2015-00022	2015-00703	2015-03031	2015-03364
2015-03764	2015-03781	2015-08951	2015-09869	2015-11528
2015-11588	2015-11613	2015-11648	2015-11657	2015-12028
2015-13070	2016-03173	2016-03178	2016-03179	2016-03036
2016-03913	2016-05374	2016-07523	2016-07839	2016-08382
2016-08383	2016-08400	2016-08401		

Section 2RS2: Occupational ALARA Planning and Controls

ALARA Planning, Work-In-Progress Reviews

Number	Title	Date
16-0613-1	ALARA Plan	September 14, 2016
16-0613-1	Work-In-Progress Review – 50% Review	
16-0614-1	ALARA Plan	September 14, 2016
16-0618-1	ALARA Plan	September 13, 2016
16-0618-1	Work-In-Progress Review Remove/Re-Install FH-5, Transfer Tube Flange	
16-0618-1	Work-In-Progress Review – #2 FH-5: Remove Fuel Transfer Tube Flange	November 2, 2016
16-0623-1	ALARA Plan	September 13, 2016

Audits and Self-Assessments

Number	Title	Date
NOSA-FCS·16-04	Chemistry, Radwaste, Effluent and Environmental Monitoring Audit Report	July 15, 2016
NOSCPA-FC-16-03	Fort Calhoun Radiation Protection Performance Report	April 1, 2016

Miscellaneous Documents

Number	Title	Date
RP-FC-1	FCS Nuclear Policy: Radiation Protection	May 21, 2014

Procedures

Number	Title	Revision
MM-RR-RC-0305	Removal of Reactor Vessel Closure Head, Hold Down Ring, and Upper Guide Structure	40
RP-AA-16	ALARA Program Description	0
RP-AA-203	Exposure Control and Authorization	3
RP-AA-400	ALARA Program	13
RP-AA-400-1004	Emergent Dose Control and Authorization	8
RP-AA-400-1006	Outage Exposure Estimating and Tracking	5
RP-AA-400-1006	Remote Monitoring System	2
RP-AA-401	Operational ALARA Planning and Control	21
RP-AA-403	Administration of the Radiation Work Permit Program	8
RP-AA-550-1001	Hot Spot and Radiation Sources Component Tracking	3
RP-AA-552	Guidelines for Installation and Control of Spot Shielding	0
TDB-IV.8	Area Monitoring Setpoints	88

Radiation Surveys

Number	Title	Date
M-20161026-4	Initial Entry Upper Cavity Survey	October 26, 2016
M-20161027-6	Room 13	October 27, 2016
M-20161106-4	Room 13	November 6, 2016

Radiation Work Permits

Number	Title	Revision
16-0613	Rx Head Disassembly/Reassembly	0
16-0614	Rx Head / Upper Internals Moves	0
16-0618	Transfer Canal Blind Flange and LLRT	0
16-0623	Rx Cavity Decontamination	0

Condition Reports

2015-13697	2016-00664	2016-01106	2016-01165	2016-02479
2016-03339	2016-03804	2016-04470	2016-07416	2016-08124
2016-08128	2016-08141			

Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Audits and Self-Assessments

Number	Title	Date
NOSA-FCS-15-06	Radiation Protection Audit Report	July 24, 2015
NOSCPA-FC-15-11	Fort Calhoun Radiation Protection Performance Report	October 5, 2015

Compressed Air System Testing Records

Number	Title	Date
15-31133	Compressor & Stored Air	November 10, 2015
16-08089	Compressor & Stored Air	March 16, 2016
16-15711	Compressor & Stored Air	June 1, 2016
16-23849	Compressor & Stored Air	August 18, 2016

Engineered System Filter Test Records

W/O Number	Title	Date
00561925	VA-64A Control Room HEPA and Charcoal Filter Test	May 27, 2016
00563744	Control Room Charcoal Filter VA-64A Replacement or Methyl Iodine Removal Efficiency Test	March 8, 2016
00561926	VA-64B Control Room HEPA and Charcoal Filter Test	March 22, 2016

Engineered System Filter Test Records

W/O Number	Title	Date
00572444	Control Room Charcoal Filter VA-64A Replacement or Methyl Iodine Removal Efficiency Test	September 30, 2016

Procedures

Number	Title	Revision
RP-AA-13	Respiratory Protection Program Description	0
RP-AA-440	Respiratory Protection Program	13
RP-AA-441	Evaluation and Selection Process for Radiological Respirator Use	6
RP-AA-825-1035	Issue and Control of Respirators	2
RP-FC-443-AD-509	Quantitative Respirator Fit Testing	0
RP-FC-825-AD-513	SCBA Air Compressor Fill System Operation	1
SE-ST-VA-0006	VA-64A Control Room HEPA and Charcoal Filter Test	8
SE-ST-VA-0007	Control Room Charcoal Filter VA-64B Replacement or Methyl Iodine Removal Efficiency Test	6
SE-ST-VA-0008	Control Room Charcoal Filter VA-64A Replacement or Methyl Iodine Removal Efficiency Test	8
SE-ST-VA-0015	VA-64B Control Room HEPA and Charcoal Filter Test	4a

Respirator Testing, Inspection, and Inventory Records

Number	Title	Date
EX271160	SCBA Test	January 12, 2016
FM020	SCBA Test	May 26, 2016
FM024	SCBA Test	June 22, 2016
FC-RP-507-8	Face Piece Check Log	2016
FC-RP-507-9	PAPR Check Log	2015
FC-RP-507-18	MMR / SCBA / Nightfighter Heads-Up Display Check Log	2015
FC-RP-507-18	MMR / SCBA / Nightfighter Heads-Up Display Check Log	2016

Condition Reports

2015-05562	2015-05656	2015-06500	2015-07981	2015-10639

Condition Reports

2015-11219	2016-02288	2016-02395	2016-08149	

Section 2RS4: Occupational Dose Assessment

Audits and Self-Assessments

Number	Title	Date
NOSA-FCS·16-04	Chemistry, Radwaste, Effluent and Environmental Monitoring Audit Report	July 15, 2016
NOSCPA-FC-16-03	Fort Calhoun Radiation Protection Performance Report	April 1, 2016

Miscellaneous Documents

Number	Title	Date
100518-0	National Voluntary Laboratory Accreditation Program Certificate for Ionizing Radiation Dosimetry	January 1, 2016
FC-15-001	Evaluation of Instrument Response to Measured Plant Radionuclide Mix	January 25, 2016
FC-15-002	Sensitivity Study for Radiation Protection monitors for Exit from the RCA and PA	May 19, 2015

Procedures

Number	Title	Revision
RP-AA-10	Radiation Protection Process Description	3
RP-AA-11	External Dose Control Program Description	2
RP-AA-12	Internal Dose Control Program Description	1
RP-AA-210	Dosimetry Issue, Usage, and Control	26
RP-AA-214	Area Dosimeter Surveillance	5
RP-AA-270	Prenatal Radiation Exposure	7
RP-AA-280	Occupational Exposure Reporting	9
RP-AA-301	Radiological Air Sampling Program	9
RPI-15	Evaluating Source Term for Radiation Protection Issues	3

Condition Reports

2016-00451	2016-00887	2016-02055	2016-04898	2016-05633
2016-06630				

Section 4OA1: Performance Indicator Verification

Miscellaneous Documents

Number	Title	Revision/Date
	Chemistry Logs and Data Sheets	
	Chemistry Monthly Data Sheets for Iodine-131 Activity	October 2015 – September 2016
	Control Room Logs	
	Licensee Event Reports	
	MSPI Basis Document	1
	MSPI Derivation Reports for RHR Unavailability	October 2015 - September 2016
	MSPI Derivation Reports for RHR Unreliability	October 2015 - September 2016
	MSPI Derivation Reports for EDG Unavailability	October 2015 - September 2016
	MSPI Derivation Reports for EDG Unreliability	October 2015 - September 2016
	NRC MSPI for FCS Emergency AC Power System through 3rd Quarter 2016	
	NRC MSPI for FCS RHR System through 3rd Quarter 2016	
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7

Procedures

Number	Title	Revision
EP-FC-121-AD-F-03	Alert Notification System Silent Test	0
EP-FC-121-AD-F-04	Alert Notification System Growl Test	0, 1
EP-FC-121-AD-F-05	Alert Notification System Complete Cycle Test	0, 1
EP-FC-125-1001	EP Performance Indicator Guidance	0
EP-FC-125-1002	ERO Performance, Performance Indicators Guidance	0, 1

Procedures

Number	Title	Revision
EP-FC-125-1003	ERO Readiness, Performance Indicators Guidance	0, 1, 2
EP-FC-125-1004	Emergency Response Facilities and Equipment, Performance Indicators Guidance	0
EP-FC-1001, Addendum 3	Emergency Action Levels for Fort Calhoun Station	0,1, 2
LS-AA-2001	Collecting and Reporting of NRC Performance Indicator Data	14
LS-AA-2200	Mitigating System Performance Index Data Acquisition and Reporting	5

Condition Reports

2015-03876	2015-04542	2015-09426	2015-11890	2015-12651
2015-12633	2015-12787	2016-00508	2016-00903	2016-06462
2016-07048	2016-07154	2016-07163	2016-07910	2016-08039

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Miscellaneous Documents

Number	Title	Revision/Date
	MSPI Indicator for the Period Ending August 2016	September 22, 2016
2016-002	Licensee Event Report, Unanalyzed Condition Shutdown Heat Exchanger Isolations	0, 1
11405-M-10	Auxiliary Component Cooling System P&ID, Sheet 2	22
11405-M-10	Auxiliary Component Cooling System P&ID, Sheet 3	26
11405-M-10	Composite Flow Diagram Auxiliary Coolant Component Cooling System P&ID, Sheet COV	36
11405-M-40	Auxiliary Coolant Component Cooling System P&ID, Sheet 1	36
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7
NUREG-1022	Event Report Guidelines 10 CFR 50.72 and 50.73	3
USAR 6.2	Safety Injection System	42
USAR 9.3	Shutdown Cooling System	14
USAR 9.7	Component Cooling Water System	18

Procedures

Number	Title	Revision
ER-AA-1200	Critical Component Failure Clock	12

Condition Reports

2015-01388	2016-02053	2016-05505	2016-07637	2016-04468
2016-05340	2016-07469			

The following items are requested for the
Occupational Radiation Safety Inspection
at Fort Calhoun Station
October 31, 2016 – November 10, 2016
Integrated Report 2016004

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **October 11, 2016**.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.0**1** should be in a file/folder titled "**1**- A," applicable organization charts in file/folder "**1**- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspector will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact John O'Donnell at (817) 200-1441 or john.odonnell@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

2. Occupational ALARA Planning and Controls (71124.02)
Date of Last Inspection: ***November 16, 2015***

A. List of contacts and telephone numbers for ALARA program personnel

B. Applicable organization charts

C. Copies of audits, self-assessments, and LERs, written since date of last inspection, focusing on ALARA

D. Procedure index for ALARA Program

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.

1. ALARA Program
2. ALARA Committee
3. Radiation Work Permit Preparation

F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the ALARA program. In addition to ALARA, the summary should also address Radiation Work Permit violations, Electronic Dosimeter Alarms, and RWP Dose Estimates

NOTE: The lists should indicate the <u>significance level</u> of each issue and the <u>search criteria</u> used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.

G. List of work activities greater than 1 rem, since date of last inspection, Include original dose estimate and actual dose.

H. Site dose totals and 3-year rolling averages for the past 3 years (based on dose of record)

I. Outline of source term reduction strategy

J. If available, provide a copy of the ALARA outage report for the most recently completed outages for each unit

K. Please provide your most recent Annual ALARA Report.

3. In-Plant Airborne Radioactivity Control and Mitigation (71124.03)
Date of Last Inspection: ***April 27, 2015***

A. List of contacts and telephone numbers for the following areas:

1. Respiratory Protection Program
2. Self-contained breathing apparatus

B. Applicable organization charts

C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support (SCBA), and LERs, written since date of last inspection related to:

1. Installed air filtration systems
2. Self-contained breathing apparatuses

D. Procedure index for:

1. Use and operation of continuous air monitors
2. Use and operation of temporary air filtration units
3. Respiratory protection

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.

1. Respiratory protection program
2. Use of self-contained breathing apparatuses
3. Air quality testing for SCBAs
4. Use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation

F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the Airborne Monitoring program including:

1. Continuous air monitors
2. Self-contained breathing apparatuses
3. Respiratory protection program

NOTE: The lists should indicate the <u>significance level</u> of each issue and the <u>search criteria</u> used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

G. List of SCBA qualified personnel - reactor operators and emergency response personnel

H. Inspection records for self-contained breathing apparatuses (SCBAs) staged in the plant for use since date of last inspection.

I. SCBA training and qualification records for control room operators, shift supervisors, STAs, and OSC personnel for the last year.

A selection of personnel may be asked to demonstrate proficiency in donning, doffing, and performance of functionality check for respiratory devices

J. List of respirators (available for use) by type (APR, SCBA, PAPR, etc.), manufacturer, and model.

4. Occupational Dose Assessment (Inspection Procedure 71124.04)

Date of Last Inspection: ***November 16, 2015***

A. List of contacts and telephone numbers for the following areas:

1. Dose Assessment personnel

B. Applicable organization charts

C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since date of last inspection, related to:

1. Occupational Dose Assessment

D. Procedure indexes for the following areas:

1. Occupational Dose Assessment

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.

1. Radiation Protection Program
2. Radiation Protection Conduct of Operations
3. Personnel Dosimetry Program
4. Radiological Posting and Warning Devices
5. Air Sample Analysis
6. Performance of High Exposure Work
7. Declared Pregnant Worker
8. Bioassay Program

F. List of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, associated with:

1. National Voluntary Laboratory Accreditation Program (NVLAP)
2. Dosimetry (TLD/OSL, etc.) problems
3. Electronic alarming dosimeters
4. Bioassays or internally deposited radionuclides or internal dose
5. Neutron dose

NOTE: The lists should indicate the <u>significance level</u> of each issue and the <u>search criteria</u> used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

G. List of positive whole body counts since date of last inspection, names redacted if desired

H. Part 61 analyses/scaling factors

I. The most recent National Voluntary Laboratory Accreditation Program (NVLAP) accreditation report or, if dosimetry is provided by a vendor, the vendor’s most recent results