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

February 14, 2012

EA-11-288

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

Subject: FORT CALHOUN - NRC INTEGRATED INSPECTION REPORT 05000285/2011005

Dear Mr. Bannister:

On December 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 9, 2012, with Mr. John Goodell, Division Manager, Nuclear Performance Improvement and Support, and other members of your staff.

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

Two NRC-identified findings and two self-revealing findings of very low safety significance (Green) were identified during this inspection.

Four of these findings were determined to involve violations of NRC requirements. Further, a licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. The NRC is treating these violations as non-cited violations, consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the violations or the significance of the noncited violations, 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, D.C. 20555-0001, with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Fort Calhoun Station facility.

If you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your

disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at Fort Calhoun.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document 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,

/R.Deese for/

Jeff Clark, Branch Chief
Project Branch F
Division of Reactor Projects

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

Enclosure: Inspection Report 05000285/2011005
w/ Attachment: Supplemental Information

cc w/ enclosure: Electronic Distribution

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Publicly Avail	☑Yes ☐ No	Sensitive	☐ Yes☑No	Sens. Type Initials	RWD

SRI:DRP/	RI:DRP/	C:ORA/ACES	C:DRS/EB1	C:DRS/EB2
JCKirkland	JFWingebach	HGepford	TRFarnholtz	GBMiller
E-RDeese	**E-RDeese**	**/RA/**	**/RA/**	**/RA/**
2/14/12	2/14/12	2/14/12	2/ 8/12	2/7/12
C:DRS/OB	C:DRS/PSB1	C:DRS/PSB2	C:DRS/TSB	C:DRP/F
MSHaire	MCHay	GEWerner	RDAlexander	JAClark
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000285
License:	DPR-40
Report:	05000285/2011005
Licensee:	Omaha Public Power District
Facility:	Fort Calhoun Station
Location:	9610 Power Lane Blair, NE 68008
Dates:	October 1 through December 31, 2011
Inspectors:	J. Kirkland, Senior Resident Inspector J. Wingebach, Resident Inspector L. Carson II, Senior Health Physicist C. Graves, Health Physicist P. Elkmann, Senior Emergency Preparedness Inspector D. Reinert, Reactor Inspector
Approved By:	J. Clark, Chief, Project Branch F Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000285/2011005; 10/01/2011 – 12/31/2011; Fort Calhoun Station, Integrated Resident and Regional Report; Heat Sink Performance, Occupational Dose Assessment.

The report covered a 3-month period of inspection by resident inspectors and three announced baseline inspections by region-based inspectors. Four Green noncited violations of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The crosscutting aspect is determined using Inspection Manual Chapter 0310, "Components within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing noncited violation of Fort Calhoun Station Technical Specification 5.8.1 occurred due to the licensee's failure to follow a procedure for placing the reactor coolant system level monitors into service. This failure resulted in the inadvertent draining of approximately 1,800 gallons of reactor coolant to the reactor coolant drain tank. This issue was entered into the licensee's corrective action program as Condition Report 2011-2890.

  The inspectors determined that the licensee's failure to follow Procedure OI RC 1A, "RCS Instrumentation Operating Instruction," was a performance deficiency. This was a result of the licensee's failure to properly implement a required procedure, and was within the licensee's ability to foresee and correct and should have been prevented. This performance deficiency was more than minor because it could be reasonably viewed as a precursor to a significant event, i.e., could lead to a complete loss of reactor coolant inventory. The inspectors evaluated this finding using Inspection Manual Chapter 0609, Attachment 4, and determined that this finding is associated with the Initiating Events Cornerstone, specifically the primary system loss-of-coolant accident initiator contributor. Since the finding affected the safety of the reactor during a refueling outage, the inspectors further evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." Using Attachment 1 of Appendix G, the inspectors determined that a Phase 2 analysis was required because the finding increased the likelihood of a loss of reactor coolant system inventory. A senior reactor analyst determined that the Phase 2 analysis was White, requiring a Phase 3 analysis. The Phase 3 analysis determined that the finding was of very low safety significance (green) because the leak path was small enough to allow sufficient time for operator action. This finding has a cross-cutting aspect in the area of human performance associated with the component of work practices because the licensee

failed to communicate human error prevention techniques, such as self- and peer-checking [H.4(a)]. (Section 1R04)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” which requires, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures. Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions. Specifically, prior to November 16, 2011, the prerequisite calculated heat loads used to demonstrate validity of the performance testing of component cooling water heat exchanger AC-1A test conditions did not agree to within the expected uncertainty, and ultrasonic flow meters were not calibrated to the appropriate range of test flow conditions. The licensee has entered this violation into their corrective action program as Condition Report 2011-9401.

  The inspectors determined that the failure to perform testing and evaluation of safety-related heat exchangers in accordance with written procedures was a performance deficiency. This finding is more than minor because it adversely affected the Mitigating Systems Cornerstone objective of equipment performance to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Additionally, the finding is more than minor because if left uncorrected it could lead to a more significant safety concern, as the failure to perform appropriate performance monitoring testing of the component cooling water heat exchangers could reasonably result in an unrecognized condition of a system failing to fulfill its safety-related function. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because it did not represent a loss of system safety function, nor an actual loss of safety function of a single train, and it did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that this finding had a crosscutting aspect in the area of human performance, work practices, because the licensee did not communicate human error prevention techniques, such as self- and peer-checking and proper documentation of activities [H.4(a)] (Section 1R07).

Cornerstone: Occupational Radiation Safety

- Green. Inspectors reviewed a self-revealing, noncited violation of Technical Specification 5.8.1 for failure to follow procedures requiring workers to comply with radiological work permit instructions. Specifically, two workers changed the work scope for valve FCV-326 from reassembly to rework using abrasive pads without notifying radiation protection personnel. The licensee’s corrective action

was to counsel the workers on the importance of adhering to the stated work scope and radiation work permit procedures. This issue was entered into the licensee's corrective action program as Condition Reports 2011-3944, 2011-3046, and 2011-9795.

The failure to follow the requirements of the radiation work permit as instructed by radiation protection was a performance deficiency. The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding was determined to have a human performance crosscutting aspect associated with work practices, because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)] (2RS04).

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a noncited violation of 10 CFR 50.47(b)(10) for failure to develop and put into place guidelines for the choice of protective actions during an emergency that implemented federal guidance. Specifically, licensee guidance did not implement Regulatory Information Summary 2003-012, in that it allowed the subsequent removal of recommendations to evacuate members of the public during a radiological emergency.

  This finding is more than minor because it affected the Emergency Preparedness Cornerstone attributes of emergency response organization performance and procedure quality. The finding had a credible impact on the cornerstone objective because rescinding an existing protective action recommendation can confuse offsite governmental authorities and the public. The finding is of very low safety significance because it was not a functional failure or degraded planning standard function. The finding was not a degraded planning standard function because the licensee's process was capable of producing correct protective action recommendations. This finding has been entered into the licensee's corrective action program as Condition Report 2011-8530 (Section 4OA1).

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

The station remained in Mode 5 for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- April 12, 2011, Reactor Coolant System shutdown level instrumentation lineup
- October 26, 2011, Shutdown Cooling lineup with HCV-335 (Shutdown Cooling Heat Exchangers AC-4A&B Inlet Header Isolation Valve) closed

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updates Safety Analysis Report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two partial system walkdowns sample as defined in Inspection Procedure 71111.04-05.

b. Findings

Introduction. A self-revealing noncited violation of Fort Calhoun Station Technical Specification 5.8.1 occurred due to the licensee's failure to follow a procedure while placing the reactor coolant system level monitors into service. This failure resulted in the inadvertent draining of approximately 1,800 gallons of reactor coolant to the reactor coolant drain tank.

Description. On April 12, 2011, the licensee was in the process of placing the reactor coolant system level sight glass (LI-199), the reactor coolant system shutdown level transmitter (LT-197), and the reactor hot leg coolant level transmitter (LT-119) in service using Procedure OI-RC-1A, "RCS Instrumentation Operating Instruction." The valve line-up directed the operator to check RC-122 (loop 1 hot leg drain to waste disposal) closed then open RC-128 (loop 1 hot leg refueling level isolation valve).

While performing the valve line-up, the operator opened RC-122 rather than check it closed. At approximately 4:25 p.m., the operator opened RC-128 with no peer-check performed for the operator. This created a flow path for water to be drained from the hot leg to the reactor coolant drain tank. At approximately 4:45 p.m., RC-122 was closed, stopping the draining of reactor coolant. The pressurizer level decreased from 69 percent to 34 percent, which was approximately 1,800 gallons.

Analysis. The inspectors determined that the licensee's failure to follow Procedure OI-RC-1A was a performance deficiency. This was a result of the licensee's failure to properly implement a required procedure, and was within the licensee's ability to foresee and correct and should have been prevented. This performance deficiency was more than minor because it could be reasonably viewed as a precursor to a significant event, i.e., could lead to a complete loss of reactor coolant inventory. The inspectors evaluated this finding using Inspection Manual Chapter 0609, Attachment 4, and determined that this finding is associated with the Initiating Events Cornerstone, specifically the primary system loss-of-coolant accident initiator contributor. Since the finding affected the safety of the reactor during a refueling outage, the inspectors further evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." Using Attachment 1 of Appendix G, the inspectors determined that a Phase 2 analysis was required because the finding increased the likelihood of a loss of reactor coolant system inventory. A senior reactor analysis determined that the Phase 2 analysis was White, requiring a Phase 3 analysis.

The analysts performed a Phase 3 Significance Determination Process risk analysis using a modified version of the Fort Calhoun Station at-power Standardized Probabilistic Analysis Risk model, Version 8.15. The analysts developed an event tree specific to a loss of reactor coolant system inventory outside containment with the reactor in a shutdown condition. The Region IV senior reactor analyst quantified the risk of the event as a conditional core damage probability of 3.0×10^{-7}. The dominant core damage sequence from the model involved the following events:

- An operator misaligns the level sight glass valve, initiating a 90 gpm drain of the reactor coolant system;
- Control room operators diagnose that a loss of inventory is occurring before the shutdown cooling system fails from cavitation;
- Operators fail to isolate the loss of inventory before the shutdown cooling system fails from cavitation;
- Operators fail to provide forced feed to the reactor before the shutdown cooling system fails from cavitation;
- The operating train of shutdown cooling fails from cavitation as level drops below the middle of the primary system hot leg;
- Operators fail to provide forced feed to the reactor after shutdown cooling has failed; and
- The reactor core heats up, causing water to boil, resulting in uncovering the active fuel and the onset of fuel damage.

These events were all the result of operator actions. As documented in NUREG/CR-6883, "The SPAR-H Human Reliability Analysis Method," the more time available to a crew to diagnose and act upon an abnormal event the less likely they are to fail in a given task. Because the leak path was sufficiently small (90 gpm) and the amount of water sufficiently large (31,000 gallons), there was additional time for operators to take the actions documented above. As such, the probability of failure for these actions was lower than they would have been with a higher leak rate.

As stated above, the quantified conditional core damage frequency for the event was of 3.0×10^{-7}, thus making this finding of very low risk significance (Green). This finding has a cross-cutting aspect in the area of human performance associated with the component of work practices because the licensee failed to communicate human error prevention techniques, such as self- and peer-checking [H.4(a)].

Enforcement. Technical Specification 5.8.1.a, "Procedures," states, written procedures and administrative policies shall be established, implemented, and maintained covering the following activities: (a) The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, 1978. NRC Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," Section 3, "Procedures for Startup, Operation, and Shutdown of Safety-Related PWR Systems," states, in part, that instructions for energizing, filling, venting, startup and changing modes of operation should be prepared for the Reactor Coolant System. Attachment 3, "Placing LT-119, LI-199 and LT-197 In Service," of Fort Calhoun Station Procedure OI-RC-1A, "RCS Instrumentation" requires the completion of Checklist OI-RC-1A-CL-A. Checklist OI-RC-1A-CL-A indicates that the desired position of RC-122 (loop 1 hot leg drain to waste disposal) is closed. Contrary to the above, on April 12, 2011, in the process of placing reactor coolant system level monitors into service, the licensee failed to properly implement Fort Calhoun Station Procedure OI-RC-1A, "RCS Instrumentation" and complete Checklist OI-RC-1A-CL-A. Specifically, the licensee opened RC-122, instead

of checking it closed. This resulted in the inadvertent draining of approximately 1,800 gallons of reactor coolant to the reactor coolant drain tank. The licensee has entered this condition into their corrective action program as Condition Report 2011-2890. Because this finding was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy; NCV 05000285/2011005-01, "Failure to Follow Procedure Results in a Loss of Reactor Coolant." (EA-11-288)

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- November 28, 2011, Fire Area 32, Compressor Area (Room 19)
- November 29, 2011, Fire Area 42, Control Room Complex (Rooms 72 - 81)
- December 19, 2011, Fire Area 34B, Electrical Penetration Area Ground and Intermediate Levels (Room 57)

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On October 15, 2011, the inspectors observed a fire brigade activation to combat a fire in the fabrication shop. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of preplanned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives.

These activities constitute completion of one annual fire-protection inspection sample as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the Updated Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- December 22, 2011, Safety Injection and Containment Spray Pump Areas, Rooms 21 and 22

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for component cooling water heat exchanger AC-1A, shutdown-cooling heat exchanger AC-4B, and the spent fuel pool heat exchanger. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method outlined in EPRI Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines," the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three heat sink inspection samples as defined in Inspection Procedure 71111.07-05.

b. Findings

Inadequate Performance Monitoring Test for Component Cooling Water Heat Exchangers

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure to perform component cooling water heat exchanger performance monitoring testing in accordance with station procedures. The licensee did not meet prerequisites for assuring that the calculated tube and shell side heat loads were the same and did not use appropriately calibrated flow monitoring instrumentation.

Description. The inspectors reviewed test results associated with the October 14, 2010, and March 30, 2011, component cooling water AC-1A heat exchanger performance monitoring test. The inspectors noted that the calculated heat loads for each side of the heat exchanger differed by 57 percent in the October 14, 2010 test and 19 percent in the March 30, 2011 test. The calculated heat loads for the two sides of the heat exchanger should have been the same for each respective test.

The licensee monitors performance of the component cooling water heat exchanger in accordance with Procedures SE-PFT-CCW-0001, "Component Cooling Water Heat Exchangers Performance Test," and PED-SEI-16, "Evaluation of Heat Exchanger Performance." Procedure PED-SEI-16, Revision 9, Step 5.2.1, Section E, states that

"the calculated tube and shell side heat loads should be within 15 percent. If the difference between the heat loads is higher, the test conditions are not valid and the test cannot be performed." For both the October 14, 2010, and March 30, 2011, component cooling water AC-1A heat exchanger tests, test data was collected and the evaluation of performance was completed despite the heat loads not agreeing within 15 percent. The inspectors performed an extent of condition review of test data and identified several other instances for other heat exchangers in the component cooling water system for which the calculated heat loads exceeded the 15 percent agreement prerequisite.

The licensee could not provide a technical justification for the use of 15 percent as the acceptance criterion for the heat balance check. Any error between the calculated heat loads should be attributed to the uncertainty in the fluid temperature and flow rate measurements used to determine the heat transfer rates. If the heat loads do not agree to within the expected measurement uncertainty, the disparity could be due to instrument problems, unexpected heat losses from the heat exchanger to ambient surroundings, or bypass flow, in which a portion of the measured flow may not be going through the heat transfer surface. Any such conditions would call into question the validity of the test.

Furthermore, the check of calculated heat loads does not occur until Step 5.2.1, Section E, of Procedure PED-SEI-16, after all data collection is complete. This step would be more appropriately located in the beginning of the data collection procedure. The heat balance check should be a prerequisite to validate that the licensee is obtaining quality test data. Additionally, the check of calculated heat loads did not require that the 15 percent agreement calculation actually be performed and documented and did not require a signature or peer check.

The inspectors reviewed calibration records for the portable ultrasonic flow meters used in the component cooling water performance monitoring test. The portable ultrasonic flow meters were calibrated over a range of approximately 100 to 500 gallons per minute. The flow rates used in the heat exchanger test range from approximately 1,000 gallons per minute to 4,000 gallons per minute. The flow meters were verified to have a vendor rated capacity of up to 50,000 gallons per minute, but 500 gallons per minute is the calibration limit of the vendor used by the licensee to perform the flow meter calibration. Using flow meters outside of their range of calibration could produce inaccurate measurements. Inaccurate flow indication would then yield errors in the heat balance check.

This issue was entered into the licensee's corrective action program as Condition Report 2011-9401. One requested action from Condition Report 2011-9401 was for engineering to evaluate the basis for the 15 percent criterion. The condition report also requested a procedure change to ensure the heat balance check is satisfied before collecting all the test data. The licensee's engineering staff performed additional calculations using the most conservative measured heat loads in the most recent tests to demonstrate that the performance of the heat exchangers was still acceptable. The licensee also had an engineering change package in progress to install permanent flow meters for the component cooling heat exchanger performance monitoring test.

Analysis. The failure to perform testing and evaluation of safety-related heat exchangers in accordance with written procedures was a performance deficiency. This finding is more than minor because it adversely affected the Mitigating Systems Cornerstone objective of equipment performance to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Additionally, the finding is more than minor because if left uncorrected it could lead to a more significant safety concern, as the failure to perform appropriate performance monitoring testing of the component cooling water heat exchangers could reasonably result in an unrecognized condition of a system failing to fulfill its safety-related function. Using Manual Chapter 0609, Attachment 4, "Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) because it did not represent a loss of system safety function, nor an actual loss of safety function of a single train, and it did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that this finding had a crosscutting aspect in the area of human performance, work practices, because the licensee did not communicate human error prevention techniques, such as self- and peer-checking and proper documentation of activities. Specifically, the evaluation did not incorporate a requirement that the heat balance check step of the calculation actually be calculated and that step did not require a sign-off or peer-check [H.4(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XI, requires, in part, that a test program shall be established to assure that all testing required demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures. Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions. Contrary to the above, prior to November 16, 2011, the licensee did not perform testing of component cooling water heat exchanger AC-1A in accordance with written test procedures, and did not assure that all prerequisites for performance testing were met and that adequate test instrumentation was used. Specifically, the calculated heat loads used to demonstrate validity of test conditions did not agree to within the expected uncertainty, and ultrasonic flow meters were not calibrated to the appropriate range of test flow conditions. This issue was entered into the licensee's corrective action program as Condition Report 2011-9401. Because this finding was determined to be of very low safety significance and was entered into the license's corrective action program, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000285/2011005-02 "Inadequate Performance Monitoring Test for Component Cooling Water Heat Exchangers."

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On November 10, 2011, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were

identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- October 11, 2011, VA-64A (Control Room Ventilation Filter)
- November 11, 2011, CA-1C (Air Compressor C)
- November 18, 2011, RM-057 (Condenser Evacuation In-Line Gas Radiation Monitor)

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or -(a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- October 25, 2011, risk management actions with HCV-335 (shutdown cooling heat exchangers AC-4A&B inlet header isolation valve) closed

- October 30, 2011, risk management actions associate with taking diesel generator 2, and buses 1B3C and 1B3C/4C out of service at the same time

- December 15, 2011, risk associated with drain down for pressurizer heater inspection

- December 16, 2011, risk associated with pressurizer heater replacement

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid, and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- November 28, 2011, Operability of HCV-335 (Shutdown Cooling Heat Exchangers AC-4A&B Inlet Header Isolation Valve) following replacement of hand wheel key

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and

design criteria in the appropriate sections of the technical specifications and Updated Safety Analysis Report to the licensee personnel's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one operability evaluations inspection sample as defined in Inspection Procedure 71111.15-04

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the following temporary modifications:

- November 8, 2011: Temporary modifications associated with taking 480 V bus 1B3B out of service for maintenance, specifically, temporary power for the raw water strainer AC-12A, Loop 2 to Shutdown Cooling Isolation Valve HCV-348, and Diesel Driven Fire Pump FP-1B

The inspectors reviewed the temporary modifications and the associated safety-evaluation screening against the system design bases documentation, including the USAR and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- November 14, 2011, postmaintenance testing of diesel generator 2 following an 18-month overhaul

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed

- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the Updated Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one postmaintenance testing inspection sample as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the Update Safety Analysis Report, procedure requirements, and technical specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- October 17, 2011, OP-ST-RW-3004, Raw Water System Category C Valve Inservice Test
- October 25, 2011, EM-ST-ESF-0002, 13.8 KV Emergency Power Periodic Test

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Cornerstone: Emergency Preparedness

.1 Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on November 10, 2011, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS04 Occupational Dose Assessment (71124.04)

a. Inspection Scope

This area was inspected to: (1) determine the accuracy and operability of personal monitoring equipment; (2) determine the accuracy and effectiveness of the licensee's methods for determining total effective dose equivalent; and (3) ensure occupational dose is appropriately monitored. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- External dosimetry accreditation, storage, issue, use, and processing of active and passive dosimeters

- The technical competency and adequacy of the licensee's internal dosimetry program

- Adequacy of the dosimetry program for special dosimetry situations such as declared pregnant workers, multiple dosimetry placement, and neutron dose assessment

- Audits, self-assessments, and corrective action documents related to dose assessment since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.04-05.

b. Findings

Introduction. Inspectors reviewed a self-revealing, noncited violation of Technical Specification 5.8.1 for failure to follow Radiation Work Permit 11-2520 and procedures, which required workers to comply with radiological work practices. Specifically, workers changed the work scope approved on the low-pressure safety injection shutdown cooling bypass valve FCV-326 without notifying radiation protection and receiving a re-evaluation of the radiological conditions as required by the radiation work permit.

Description. On May 2, 2011, two workers were briefed by radiation protection for radiological conditions associated with reassembly of the low-pressure safety injection bypass valve FCV-326. Using the latest radiological surveys, as required by procedure, radiation protection staff briefed the workers that the radiation conditions around valve FCV-326 had contamination levels as high as 450,000 disintegrations/100 centimeters squared. The workers were being briefed to perform valve maintenance work in a high radiation area and Radiation Work Permit 11-2520. In accordance with the pre-job briefing, the authorized work scope was only to reassemble the valve, this was non-abrasive work. Yet, the workers used abrasive pads during the course of the valve reassembly, which was unknown to radiation protection. When the two workers exited the radiologically controlled area, they both alarmed the personal contamination monitors. One of the workers had approximately 30,000 disintegrations/100 centimeters squared on his clothing. Both workers were decontaminated. It was determined that the workers had not informed radiation protection personnel that they had changed the work scope in the area by using abrasive pads as required by Radiation Work Permit 11-2520. This additional valve rework was not previously approved during radiation protection's briefing. The licensee's corrective action was to counsel the workers on the importance of adhering to the stated work scope and radiation work permit instructions.

Analysis. The failure to follow the requirements of the radiation work permit as instructed by radiation protection, about the radiation work permit, was a performance deficiency. The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding was determined to have a human performance crosscutting aspect associated with work practices, because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)].

Enforcement. Technical Specification 5.8.1 states that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, Appendix A, 1978; Section 7(e)(1) of Appendix A of Regulatory Guide 1.33 lists radiation protection procedures for the control of radioactivity, and limiting personnel exposure, including a radiation work permit system. Radiation Protection Plan, Revision 24, Section 2.3.11, states that station personnel are responsible for complying with the requirements in Procedure SO-G-101, "Radiation Worker Practices," Revision 33. Procedure SO-G-101, Sections 4.3.2 and 5.4.4, requires that personnel adhere to the requirements listed on the radiation work permit they are using and comply with radiological work practices as established by the radiation protection department. Radiation Work Permit 11-2520 requires workers to contact radiation protection personnel for re-evaluation of radiological conditions if the work scope is changed. Contrary to the above, on May 2, 2011, two workers did not contact radiation protection personnel for a re-evaluation of radiological conditions when they changed the work scope on valve FCV-326 from reassembly to rework using abrasive pads. Consequently, these two individuals were found contaminated when they alarmed the personal contamination monitors. Because this violation is of very low safety significance and was entered into the licensee's corrective action program as Condition Reports 2011-3944, 2011-3946, and 2011-9795, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000285/2011005-03; "Failure to Follow Radiation Work Permit Instructions."

2RS05 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

This area was inspected to verify the licensee is assuring the accuracy and operability of radiation monitoring instruments that are used to: (1) monitor areas, materials, and workers to ensure a radiologically safe work environment; and (2) detect and quantify radioactive process streams and effluent releases. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's

procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- Selected plant configurations and alignments of process, post-accident, and effluent monitors with descriptions in the Updated Safety Analysis Report and the offsite dose calculation manual

- Select instrumentation, including effluent monitoring instrument, portable survey instruments, area radiation monitors, continuous air monitors, personnel contamination monitors, portal monitors, and small article monitors to examine their configurations and source checks

- Calibration and testing of process and effluent monitors, laboratory instrumentation, whole body counters, post-accident monitoring instrumentation, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, continuous air monitors

- Audits, self-assessments, and corrective action documents related to radiation monitoring instrumentation since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.05-05.

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 Physical Protection

4OA1 Performance Indicator Verification (71151))

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the third Quarter 2011 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, “Performance Indicator Program.”

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - Heat Removal System (MS08)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator for the period from the fourth quarter 2010 through the third quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 1, 2010 through September 20, 2011 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk co-efficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for the period from the fourth quarter 2010 through the third quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 1, 2010 through September 20, 2011 to validate the accuracy of the submittals.

The inspectors reviewed the mitigating systems performance index component risk co-efficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index residual heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Mitigating Systems Performance Index - Cooling Water Systems (MS10)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator for the period from the fourth quarter 2010 through the third quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 1, 2010 through September 20, 2011 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index cooling water system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill and Exercise Performance, performance indicator for the period from April 2010 through September 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 5 and 6, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator; assessments of performance indicator opportunities during predesignated control room simulator training sessions, and performance during other drills. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one sample of the drill/exercise performance as defined in Inspection Procedure 71151-05.

b. Findings

Introduction. A noncited violation was identified by the NRC for the failure of the licensee's guidelines for the choice of protective actions during an emergency to implement federal guidance as required by 10 CFR 50.47(b)(10).

Description. The NRC identified the failure of the licensee's guidelines for the choice of protective actions during an emergency to implement federal guidance as a performance deficiency. Specifically, the licensee did not implement Regulatory Information Summary 2003-012, "Clarification of NRC Guidance for Modifying Protective Actions," dated June 24, 2003, which states, in part, "…Licensees should not change a PAR until the threat is fully under control."

The licensee conducted an emergency preparedness drill on August 16, 2011. The inspectors reviewed notifications simulated to be made to offsite authorities at 10:48 a.m. and 12:06 p.m. on August 16, 2011, as recorded on Form FC-1188, "Fort Calhoun Station – Emergency Notification Form," Revision 26. The inspectors reviewed dose assessment reports generated on August 16, 2011, at 10:34 a.m., 10:38 a.m., 10:49 a.m., 10:58 a.m., 11:22 a.m., and 12:03 p.m., respectively, as documented on the licensee Update Report to Offsite Authorities, generated using Eagle Version 6.0. The inspectors also reviewed Procedure EOF-7, "Protective Action Guidelines," Revision 21.

The licensee transmitted a simulated protective action recommendation to offsite authorities at 10:48 a.m. of evacuate 0-2 miles in all sectors, evacuate 2-5 miles in sectors DEF (D, E, and F), and to take no action between 5-10 miles. The licensee transmitted a simulated protective action recommendation (PAR) to offsite authorities at 12:06 p.m. of evacuate 0-2 miles in all sectors and to take no action between 2-10 miles.

The inspectors determined that protective action guides were exceeded at the site boundary on dose assessments performed at 11:21 a.m. and 12:03 p.m., and that protective action guides were not exceeded at 2 miles on any dose assessment report. The licensee recommendation at 12:06 p.m. was based on a change in wind direction from 271 degrees to 301 degrees. The 12:06 p.m. notification deleted the previous recommendation to evacuate between 2-5 miles in sectors DEF (D, E, and F), because no protective action guide thresholds were currently exceeded at 2 miles.

The inspectors reviewed the guidance of Regulatory Information Summary 2003-012, "Clarification of NRC Guidance for Modifying Protective Actions," dated June 24, 2003, which states, in part, "…Licensees should not change a PAR [protective action recommendation] until the threat is fully under control." The inspectors concluded that the licensee should not have deleted the recommendation to evacuate 2-5 miles in sectors DEF (D, E, and F) after it was transmitted at 10:48 p.m. because recommendations not to evacuate an area following a previous evacuation recommendation can be confusing to both offsite governmental authorities and to the public. Attempting to rescind an existing evacuation recommendation can impact the licensee's ability to adequately implement protective measures for the public.

Analysis. The inspectors determined the licensee's failure to have guidelines for the choice of protective actions during an emergency that implement federal guidance is a performance deficiency within the licensee's control. This finding is more than minor because it had a credible impact on safety and affected the Emergency Preparedness Cornerstone attributes of emergency response organization performance and procedure quality. The finding had a credible impact on the cornerstone objective because rescinding an existing protective action recommendation can confuse offsite governmental authorities and the public, and affects the implementation of adequate measures to protect the health and safety of the public. The finding was associated with a violation of NRC requirements. This finding was evaluated using the Emergency Preparedness Significance Determination Process and was determined to be of very low safety significance because it was a failure to comply with NRC requirements, was associated with a risk significant planning standard as defined by Inspection Manual Chapter 0609, Appendix B, and was not a functional failure or degraded planning standard function. The finding was not a degraded planning standard function because the licensee's process was capable of producing correct protective action recommendations. This finding has been entered into the licensee's corrective action program as Condition Report 2011-8530.

Enforcement. Title 10 of the Code of Federal Regulations, Part 50.47(b)(10) states, in part, "A range of protective actions has been developed for the plume exposure pathway …guidelines for the choice of protective actions during an emergency, consistent with federal guidance, are developed and in place…." Contrary to the above, the licensee did not develop and put into place guidelines for the choice of protective actions during an emergency that were consistent with federal guidance licensee. Specifically, Procedure EOF-7, "Protective Action Guidelines," Revision 21, did not prohibit revising existing protective actions recommendations for evacuation of the public in accordance with the guidance of Regulatory Information Summary 2003-012.

NCV 05000285/2011-0005-04, Inadequate licensee procedure for making protective action recommendations.

.6 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Emergency Response Organization Drill Participation performance indicator for the period from April 2010 through September 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, rosters of personnel assigned to key emergency response organization positions, and exercise participation records. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one sample of the emergency response organization drill participation as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.7 Alert and Notification System (EP03)

a. Inspection Scope

The inspectors sampled licensee submittals for the Alert and Notification System performance indicator for the period from April 2010 through September 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator and the results of periodic alert notification system operability tests. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one sample of the alert and notification system as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of June 1, 2011, through November 30, 2011 although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of one single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

4OA3 Event Follow-up (71153)

.1 (Open) Licensee Event Report 05000285/2011-003-03: Inadequate Flooding Protection Due To Ineffective Oversight

During identification and evaluation of flood barriers, unsealed through wall penetrations in the outside wall of the intake, auxiliary and chemistry and radiation protection buildings were identified that are below the licensing basis flood elevation. Additionally a potential flooding issue was identified on the inside of the intake structure. Holes were noted in the floor at the 1007'6" level, which is the ceiling of the raw water vault.

A summary of the root causes included: a weak procedure revision process; insufficient oversight of work activities associated with external flood matters; ineffective identification, evaluation and resolution of performance deficiencies related to external flooding; and "safe as is" mindsets relative to external flooding events.

The penetrations were temporarily sealed and a configuration change was developed and implemented whereby permanent seals were installed. A one-foot sandbag berm

was placed around the holes. Comprehensive corrective actions to address the root and contributing causes are being addressed through the corrective action program.

.2 (Open) Licensee Event Report 05000285/2011-008-01: Fire in Safety Related 480 Volt Electrical Bus

On June 7, 2011, at approximately 9:30 a.m. Central Daylight Time, a failure of a safety related 480-volt AC (V) load center supply breaker in the switchgear room occurred (Bus 1B4A). Fire alarms were received in the control room and the Halon system that protects the switchgear rooms discharged. The fire brigade responded and found the room filled with smoke, but no active fire. At 9:40 a.m., Central Daylight Time an Alert was declared for a fire affecting the operability of plant safety systems required to establish or maintain safe shutdown. At 1:13 p.m. Central Daylight Time on June 7, 2011, Fort Calhoun Station exited the Alert after confirming that the fire was extinguished and the area was ventilated to restore access. Shutdown cooling remained in-service during the event.

Fort Calhoun Station was also in an emergency classification of a Notification of Unusual Event (NOUE) due to high Missouri River levels.

The root cause of the event was the Fort Calhoun Station design process failed to identify the silver plating of bus bar material as a critical interface when specifying replacements for the original circuit breakers. The design process failure extended to other safety-related 480v load center circuit breakers as well.

Corrective actions included replacing 480v bus 1B4A and performing bus maintenance. Affected circuit breaker cradles will be realigned to ensure proper fit in the bus cubicles. Maintenance procedures are being revised to enhance maintenance practices.

.3 (Closed) Licensee Event Report 05000285/2011-003-01: Inadequate Flooding Protection Due To Ineffective Oversight

During identification and evaluation of flood barriers, unsealed through wall penetrations in the outside wall of the intake, auxiliary and chemistry and radiation protection buildings were identified that were below the licensing basis flood elevation.

A summary of the root causes included: a weak procedure revision process; insufficient oversight of work activities associated with external flood matters; ineffective identification, evaluation and resolution of performance deficiencies related to external flooding; and “safe as is” mindsets relative to external flooding events.

The penetrations were temporarily sealed and a configuration change was developed and implemented whereby permanent seals were installed. Comprehensive corrective actions to address the root and contributing causes are being addressed through the corrective action program.

The licensee event report is closed. Revision 3 of this licensee event report was submitted on December 17, 2011.

.4 (Closed) Licensee Event Report 05000285/2011-008-00: Fire in Safety Related 480 Volt Electrical Bus

On June 7, 2011, at approximately 9:30 a.m. Central Daylight Time, a failure of a safety related 480-volt ac (Vac) load center supply breaker in the switchgear room occurred (Bus 1B4A). Fire alarms were received in the control room and the Halon System that protects the switchgear rooms discharged. The fire brigade responded and found the room filled with smoke, but no active fire. At 9:40 a.m., Central Daylight Time an alert was declared for a fire affecting the operability of plant safety systems required to establish or maintain safe shutdown. At 1:13 p.m. Central Daylight Time on June 7, 2011, Fort Calhoun Station exited the alert after confirming that the fire was extinguished and the area was ventilated to restore access.

Shutdown cooling remained in-service during the event. Fort Calhoun Station was also in an emergency classification of a Notification of Unusual Event (NOUE) due to high Missouri River level.

A root cause analysis is in progress. The results of the analysis and corrective actions were reported in Revision 1 of this licensee event report (2011-008-01).

The licensee event report is closed. Revision 1 of this licensee event report was submitted on October 27, 2011.

4OA6 Meetings

Exit Meeting Summary

On October 20, 2011, the inspectors presented results of the onsite inspection of the emergency preparedness performance indicators to Mr. D. Bannister, Vice President and Chief Nuclear Officer, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On November 18, 2011, the inspectors presented the inspection results of the heat sink performance inspection to Mr. J. Goodell, Division Manager, Nuclear Performance Improvement and Support, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On December 2, 2011, the inspectors presented the results of the radiation safety inspections to Mr. D. Bannister, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The

inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 9, 2012, the inspectors presented the quarterly inspection results to Mr. J. Goodell, Division Manager, Nuclear Performance Improvement and Support, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements, which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a noncited violation.

- The inspectors reviewed a licensee-identified, noncited violation of Technical Specification 5.8.1 for failure to follow Radiation Work Permit 11-3530, Task-3, which required workers to wear respiratory protection equipment in the lower cavity. On April 19, 2011, an individual working on the upender in the lower cavity had positive radioactivity results from his lapel air sample. The licensee investigated, performed a dose assessment, and assigned a dose from the lapel air sample of 39 mrem to the worker. The licensee found that the worker did not use respiratory protection equipment as required by the radiation work permit. Technical Specification 5.8.1 requires that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, “Quality Assurance Program Requirements,” Revision 2, Appendix A, 1978. Section 7(e)(1) lists radiation protection procedures for the control of radioactivity and limiting personnel exposure, including a radiation work permit system. Radiation Protection Plan, Revision 24, Section 2.3.11, states that station personnel are responsible for complying with the requirements in Procedure SO-G-101, “Radiation Worker Practices,” Revision 33. Procedure SO-G-101, Sections 4.3.2 and 5.4.4 requires that personnel adhere to the requirements listed on the radiation work permit they are using. Radiation Work Permit 11-3530, Task-3, required workers to wear specified respiratory protection equipment while in the lower cavity. Contrary to the above, on April 19, 2011, an individual working on the upender in the lower cavity was determined to be contaminated, and it was determined that the worker did not wear the specified NIOSH approved respiratory protection equipment required by the radiation work permit. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess does was not compromised. This issue was entered into the licensee’s corrective action program as Condition Reports 2011-3323 and 2011-9794.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Acker, Licensing Engineer
D. Bannister, Vice President and Chief Nuclear Officer
S. Baughn, Manager, Nuclear Licensing
A. Berck, Supervisor, Emergency Planning
B. Blome, Manager, Quality
C. Cameron, Supervisor Regulatory Compliance
M. Cooper, Licensing Engineer
M. Frans, Manager, Engineering Programs
S. Gebers, Manager, Emergency Planning and Health Physics
J. Goodell, Division Manager, Nuclear Performance Improvement and Support
P. Gunderson, Supervisor, Radiation Protection
J. Herman, Division Manager, Nuclear Engineering
R. Hodgson, Manager, Work Management
T. Jameson, Supervisor, Radiation Protection
A. Lollis, Supervisor, ALARA
K. Maassen, Program Engineer
T. Maine, Manager, Radiation Protection
E. Matzke, Senior Licensing Engineer
T. Nellenbach, Division Manager, Plant Operations
A. Pallas, Manager Shift Operations

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

OPENED

05000285/2011-003-03	LER	Inadequate Flooding Protection Due To Ineffective Oversight (Section 4OA3)
05000285/2011-008-01	LER	Fire in Safety Related 480 Volt Electrical Bus (Section 4OA3)

CLOSED

05000285/2011-003-01	LER	Inadequate Flooding Protection Due To Ineffective Oversight (Section 4OA3)
05000285/2011-008-00	LER	Fire in Safety Related 480 Volt Electrical Bus (Section 4OA3)

OPENED AND CLOSED

05000285/2011005-01	NCV	Failure to Follow Procedure Results in a Loss of Reactor Coolant (Section 1R04)

OPENED AND CLOSED

05000285/2011005-02	NCV	Inadequate Performance Monitoring Test for Component Cooling Water Heat Exchangers (Section 1R07)
05000285/2011005-03	NCV	Failure to Follow Radiation Work Permit Instructions (Section 2RS04)
05000285/2011005-04	NCV	Inadequate Licensee Procedure for Making Protective Action Recommendations (Section 4OA1)

LIST OF DOCUMENTS REVIEWED

Section 1RO4: Equip.m.ent Alignment

PROCEDURES

NUMBER	TITLE	REVISION
OI-SC-2	Shutdown Cooling Operation and Termination	27
OI-SC-3	Alternate Shutdown Cooling Utilizing Containment Spray Pumps	22

DRAWINGS

NUMBER	TITLE	REVISION
E-23866-210-130	Safety Injection and Containment Spray System Flow Diagram P&ID, Sheet 1	111

Section 1RO5: Fire Protection

PROCEDURES

NUMBER	TITLE	REVISION
SO-G-28	Standing Order, Station Fire Plan	81
SO-G-58	Standing Order, Control of Fire Protection System Impairments	37
SO-G-91	Standing Order, Control and Transportation of Combustible Materials	27
SO-G-102	Standing Order, Fire Protection Program Plan	11
SO-G-103	Standing Order, Fire Protection Operability Criteria and Surveillance Requirements	25

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION
EA-FC-97-001	Fire hazards Analysis Manual	16
FC05814	UFHA Combustible Loading Calculation	11
FCDR092011	Fire in Fab Shop	1
USAR 9.11	Updated Safety Analysis Report, Fire Protection Systems	23

Section 1RO6: Flood Protection Measures

PROCEDURES

NUMBER	TITLE	REVISION
AOP-10	Loss of Circulating Water	2
AOP-11	Loss of Component Cooling Water	15
AOP-18	Loss of Raw Water	7

DRAWINGS

NUMBER	TITLE	REVISION
E-23866-210-130	Composite Flow Diagram, Safety Injection and Containment Spray System P&ID	70

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
USAR, Appendix M	Postulated High Energy Line Rupture Outside the Containment	11
	Individual Plant Examination Submittal	December, 1993

Section 1RO7: Heat Sink Performance

PROCEDURES

NUMBER	TITLE	DATE
AOP-18	Loss of Raw Water	7
CH-AD-0035	Microbiologically Induced/Influenced Corrosion Monitoring Program	3

PROCEDURES

NUMBER	TITLE	DATE
CH-AD-0048	Environment Inspection for Biofouling Organisms	3
OD-PP-N-3	Strategic Water Plan	9
OP-P.M.-RW-0001	Raw Water System Interface Valve Actuation Test	8
PBD-17	Service Water Reliability	5
PED-SEI-16	Evaluation of Heat Exchanger Performance	9
PE-RR-CCW-0100	Disassembly, Cleaning, and Repair of CCW Heat Exchanger–Raw Water Side	37
PE-RR-CCW-0101	Removal and Reinstallation of Shutdown Cooling Heat Exchanger Heads	8
SE-PFT-CCW-0001	Component Cooling Water Heat Exchangers Performance Test	13
SE-PFT-CCW-0004	SFP Heat Exchanger Performance Test	4
SE-PFT-CCW-0012	AC-4B Shutdown Cooling Heat Exchanger Performance Test	5
SO-M-28	Control of Measuring and Test Equipment	71

CALCULATIONS

NUMBER	TITLE	REVISION / DATE
EAR 27057	Uncertainty Analysis for the Heat Exchanger Testing Program	June 10, 1999
EAR 96032	Evaluation of CCW Heat Exchangers Post DBA Performance with 5 Percent Plugged Tubes	March 8, 1996
FC03130	Spent Fuel Pool Heat Removal Study of Expanded Spent Fuel Storage	0
FC05693	Component Cooling Water System Design Heat Loads and Flows	0
FC05742	Acceptance Criteria for CCW Heat Exchanger Performance	0
FC07529	FCS RW/CCW Gothic Model – Additional Cases	8

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
0903648	Certificate of Calibration for Panametrics Flowmeter MT-22702	October 14, 2009
1001042	Certificate of Calibration for Panametrics Flowmeter MT-22703	February 24, 2010
1002565	Certificate of Calibration for Panametrics Flowmeter MT-22700	May 20, 2010
1003708	Certificate of Calibration for Panametrics Flowmeter MT-22701	October 15, 2010

WORK ORDERS

00125468-02	00188897-01	00201320-01	00247271-01	00328308-01
00341977-01	00362751-01	00377572-01	00388929-01	00396368-01
00413547-01	9201881			

CONDITION REPORTS

2004-1831	2007-1235	2008-6484	2008-7046	2011-1050
2011-2209	2011-4600	2011-4855	2011-9375	2011-9401

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

NUMBER	TITLE	REVISION
LOR TP.M.P	Licensed Operator Requal Training Program Master Plan	54
OPD-3-11	Licensed Activation and Watch station Maintenance	18
SO-G-26	Training and Qualification Programs Standing Orders	58

Section 1R12: Maintenance Effectiveness

CONDITION REPORTS

2008-6557	2009-0731	2009-1295	2009-1753	2009-1760
2009-2065	2009-3846	2010-0870	2010-4499	2011-0850
2011-1316	2011-1452	2011-2261	2011-5466	2011-7616

PROCEDURES

NUMBER	TITLE	REVISION
PBD-16	Program Basis Document, Maintenance Rule	9
PED-SEI-34	Maintenance Rule Program	8

MISCELLANEOUS DOCUMENTS

TITLE	REVISION / DATE
Maintenance Rule Scoping Data Sheet CTRLAC	5
Maintenance Rule Scoping Data Sheet MOVDAO	5a
Maintenance Rule Scoping Data Sheet CMPRES	4
Status of Equip.m.ent in MR Category (a)(1) or (a)(1) review	September 22, 2011

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

NUMBER	TITLE	REVISION
SO-G-87	Non-Routine Activities Requiring Formalized Plans	14
SO-M-100	Standing Order, Conduct of Maintenance	55
SO-M-101	Standing Order, Maintenance Work Control	91
SO-O-21	Shutdown Operations Protection Plan	47

MISCELLANEOUS DOCUMENTS

TITLE	DATE
Shift Outage Manager's Report	October 25, 2011
Shift Outage Manager's Report	October 30, 2011
Fort Calhoun Power Station Plan of the Day	December 15, 2011
Fort Calhoun Power Station Plan of the Day	December 16, 2011

Section 1R15: Operability Evaluations

CONDITION REPORTS

2011-7468	2011-7477	2011-8186	2011-9344	2011-9494
2011-9578	2011-9588			

Section 1R18: Plant Modifications

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE
EC 54439	Provide Temporary Power to AC-12A and HCV-348	November 7, 2011
EC 54451	Provide Temporary Power to FP-1B-BC and FP-1B-HTR	November 7, 2011

Section 1R19: Postmaintenance Testing

WORK ORDERS

357858 388485 398643 398647 398634

PROCEDURES

NUMBER	TITLE	REVISION
MM-P.M.-DG-0002	Diesel Generator DG-2 Inspection	3
OP-ST-DG-0002	Diesel Generator 2 Check	68

Section 1R22: Surveillance Testing

WORK ORDERS

412103

PROCEDURES

NUMBER	TITLE	REVISION
EM-ST-ESF-0002	13.8 KV Emergency Power Periodic Test	4
OP-ST-RW-3004	Raw Water System Category C Valve Inservice Test	18

Section 1EP6: Drill Evaluation

PROCEDURES

NUMBER	TITLE	REVISION
TBD-EPIP-OSC-1A	Recognition Category A - Abnormal Rad Levels/Radiological Effluent	1
TBD-EPIP-OSC-1C	Recognition Category C– Cold Shutdown/Refueling	2

PROCEDURES

NUMBER	TITLE	REVISION
	System Malfunction	
TBD-EPIP-OSC-1F	Recognition Category F - Fission Product Barrier Degradation	1
TBD-EPIP-OSC-1H	Recognition Category H - Hazards and Other Conditions Affecting Plant Safety	1
TBD-EPIP-OSC-1S	Recognition Category S - System Malfunction	2

MISCELLANEOUS DOCUMENTS

TITLE	DATE
Scenario Manual Volume 1, Nov 2011 Training Drill	November 10, 2011

Section 2RS04: Occupational Dose Assessment

PROCEDURES

NUMBER	TITLE	REVISION
RP-650	Internal Dosimetry Program	11
RP-655	In-Vitro Bioassay Sampling	5
RP-656	Bioassay Calculations	6
RP-AD-600	Dosimetry Program	21

CONDITION REPORTS

2010-2483	2011-2011	2011-3103	2011-3239	2011-3323
2011-3944	2011-3946	2011-4318	2011-4352	

RADIOLOGICAL SURVEYS

NUMBER	TITLE	DATE
11-0515	Pre-Job Survey FH-5 Flange	April 15, 2011
11-0550	Pre-job Survey FH-5 Flange Removal	April 15, 2011
11-0910	Removal of FCV-326 for Repair	May 2, 2011
11-0924	FCV-326 for Repair and Contamination Follow-Up	May 2, 2011

RADIATION WORK PERMITS

NUMBER	TITLE	DATE
11-2512	Reactor Head Disassembly and Transport to Head Stand	April 16, 2011
11-2520	Valve Maintenance in High Radiation Areas	March 14, 2011
11-3520	Fuel Handling Fuel Mods and Associated Task	March 10, 2011

Section 2RS05: Radiation Monitoring Instrumentation

PROCEDURES

NUMBER	TITLE	REVISION
IC-CP-02-0100	Calibration of Ludlum Model 177	3
IC-CP-02-0213	Calibration of the Tennelec LB4100 Alpha/Beta Counter	0
IC-CP-02-0611	Calibration of CM11 Alpha/Beta-Gamma Monitor	4
IC-CP-07-0008	Calibration of Eberline P.M.-7 Portal Monitor	6
IC-CP-07-0009	Calibration of Eberline PCM-2	6
RP-CP-07-0207	Calibration of the CANBERRA Whole Body Counters	4

MISCELLANEOUS DOCUMENTS

Certificate of Calibration Beta Standard Source #B2-271
Certificate of Calibration Alpha Source #2535/91
Certificate of Calibration Gamma Source #16921-22

CONDITION REPORTS

2008-4297	2009-1829	2009-2259	2009-3443	2010-4533
2011-2608	2011-2609	2011-9846		

CALIBRATION DOCUMENTS

TITLE	DATE
Electronic and Secondary Calibration of Radiation Monitor, RM-055	April 23, 2010
Electronic and Secondary Calibration of Radiation Monitor, RM-052	June 21, 2010
MGP Telepole, Serial #6603-066	January 26, 2011

CALIBRATION DOCUMENTS

TITLE	DATE
MGP Telepole, Serial #6603-092	January 26, 2011
NE Technology Small Articles Monitor SAM 11, Serial #215	February 3, 2011
NE Technology Small Articles Monitor SAM 11, Serial #228	February 3, 2011
CM11 Alpha/Beta-Gamma Monitor, Serial #637	February 5, 2011
Ludlum Model 177, Serial #49447	February 7, 2011
Eberline RO-20 Survey Meter, Serial #2720	March 28, 2011

Section 4OA1: Performance Indicator Verification

CONDITION REPORTS

2010-3178	2010-4858	2010-4859	2010-4865	2010-4898
2010-4947	2010-4983	2010-4985	2010-5086	2010-5090
2010-5129	2010-5234	2010-5244	2010-5281	2010-5324
2010-5337	2010-5344	2010-5387	2010-5393	2010-5406
2010-5416	2010-5421	2010-5428	2010-5478	2010-5480
2010-5494	2010-5502	2010-5600	2010-5617	2010-5618
2010-5636	2010-5637	2010-5674	2010-5702	2010-5711
2010-5741	2010-5749	2010-5773	2010-5810	2010-5823
2010-5824	2010-5825	2010-5826	2010-5840	2010-5930
2010-5935	2010-5936	2010-5957	2010-5958	2010-5960
2010-5969	2010-6000	2010-6051	2010-6100	2010-6108
2010-6136	2010-6137	2010-6150	2010-6159	2010-6163
2010-6178	2010-6330	2010-6340	2010-6359	2010-6373
2010-6430	2010-6497	2010-6516	2010-6531	2010-6566
2010-6584	2010-6592	2010-6640	2010-6700	2010-6701
2010-6726	2010-6755	2010-6758	2010-6760	2010-6774
2010-6784	2010-6785	2010-6802	2010-6898	2011-0022
2011-0033	2011-0052	2011-0080	2011-0089	2011-0095
2011-0125	2011-0127	2011-0155	2011-0171	2011-0178
2011-0206	2011-0223	2011-0250	2011-0251	2011-0253
2011-0256	2011-0262	2011-0292	2011-0302	2011-0343
2011-0378	2011-0440	2011-0454	2011-0456	2011-0460
2011-0490	2011-0525	2011-0528	2011-0536	2011-0540
2011-0598	2011-0605	2011-0658	2011-0679	2011-0718

CONDITION REPORTS

2011-0741	2011-0839	2011-0862	2011-0921	2011-1007
2011-1121	2011-1130	2011-1132	2011-1137	2011-1169
2011-1259	2011-1298	2011-1308	2011-1323	2011-1336
2011-1340	2011-1341	2011-1399	2011-1422	2011-1469
2011-1569	2011-1598	2011-1614	2011-1630	2011-1662
2011-1774	2011-1793	2011-1801	2011-1803	2011-1917
2011-1933	2011-1934	2011-1952	2011-1965	2011-1988
2011-1993	2011-2024	2011-2070	2011-2075	2011-2229
2011-2354	2011-2380	2011-2399	2011-2417	2011-2463
2011-2505	2011-2507	2011-2540	2011-2553	2011-2588
2011-2617	2011-2628	2011-2651	2011-2666	2011-2691
2011-2697	2011-2699	2011-2720	2011-2726	2011-2737
2011-2937	2011-2949	2011-2957	2011-3003	2011-3035
2011-3182	2011-3190	2011-3195	2011-3216	2011-3219
2011-3222	2011-3232	2011-3247	2011-3285	2011-3341
2011-3382	2011-3391	2011-3395	2011-3414	2011-3416
2011-3464	2011-3521	2011-3566	2011-3572	2011-3576
2011-3843	2011-3846	2011-3850	2011-3912	2011-3948
2011-3960	2011-3994	2011-4026	2011-4042	2011-4043
2011-4072	2011-4075	2011-4137	2011-4194	2011-4231
2011-4250	2011-4260	2011-4345	2011-4362	2011-4406
2011-4409	2011-4414	2011-4485	2011-4510	2011-4513
2011-4543	2011-4576	2011-4620	2011-4696	2011-4771
2011-4773	2011-4789	2011-4798	2011-4843	2011-4844
2011-4855	2011-4883	2011-4894	2011-4898	2011-4902
2011-4914	2011-4926	2011-4963	2011-5030	2011-5032
2011-5047	2011-5109	2011-5110	2011-5127	2011-5128
2011-5135	2011-5149	2011-5173	2011-5215	2011-5230
2011-5242	2011-5243	2011-5307	2011-5492	2011-5513
2011-5643	2011-5770	2011-5775	2011-5793	2011-5824
2011-5843	2011-5872	2011-5911	2011-5932	2011-5976
2011-6057	2011-6067	2011-6107	2011-6117	2011-6195
2011-6198	2011-6216	2011-6219	2011-6221	2011-6251
2011-6323	2011-6365	2011-6427	2011-6448	2011-6471
2011-6478	2011-6492	2011-6512	2011-6708	2011-6719
2011-6751	2011-6757	2011-6787	2011-6798	2011-6802
2011-6812	2011-6876	2011-6910	2011-6934	2011-6936
2011-6977	2011-6996	2011-7010	2011-7018	2011-7023
2011-7061	2011-7155	2011-7157	2011-7184	2011-7262
2011-7298	2011-7328	2011-7340	2011-7401	2011-7421
2011-7433	2011-7447	2011-7469	2011-7519	2011-7538
2011-7564	2011-7622	2011-7695	2011-7827	2011-7831
2011-7832	2011-7841	2011-8259	2011-8530	2011-8531
2111-9634				

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
	Various Operator Logs	October 1, 2010 to September 30, 2011
	Omaha Public Power District, Report submitted to FEMA for Upgrading the Outdoor Public Warning System	July 2004
EOF-7	Protective Action Guidelines	20 and 21
EPDM-14	Emergency Preparedness Performance Indicator Program	12
MSPI	Mitigating Systems Performance Index	0
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	6
OSC-1	Emergency Classification	46
OSC-1A	Emergency Classification Technical Basis Document	1

Section 4OA2: Identification and Resolution of Problems

MISCELLANEOUS DOCUMENTS

TITLE	DATE
Omaha Public Power District Performance Indicators	October 2011
Omaha Public Power District Performance Indicators	November 2011