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

August 9, 2013

Louis P. Cortopassi, Site Vice President
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 05000285/2013005

Dear Mr. Cortopassi:

On June 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. The enclosed inspection report documents the inspection results which were discussed on July 17, 2013 with you 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.

Three NRC identified findings of very low safety significance (Green) were identified during this inspection.

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

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

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

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

Sincerely,

/RA/

Michael C. Hay, Chief
Project Branch F
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000285/2013005
w/Attachment: Supplemental Information

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

SRI:DRP/F	RI:DRP/F	SPE:DRP/PBF	C:DRS/PSB2	C:DRP/RPBF	
JCKirkland	JFWingebach	RWDeese	JDrake	MCHay	
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000285
License:	DPR-40
Report:	05000285/2013005
Licensee:	Omaha Public Power District
Facility:	Fort Calhoun Station
Location:	9610 Power Lane Blair, NE 68008
Dates:	May 19 through June 30, 2013
Inspectors:	J. Kirkland, Senior Resident Inspector J. Wingebach, Resident Inspector G. George, Senior Reactor Inspector M. Williams, Reactor Inspector N. Greene, Ph.D., Health Physicist C. Alldredge, Health Physicist P. Hernandez, Health Physicist
Approved By:	Michael Hay, Chief Project Branch F Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000285/2013005; 05/19/2013 – 06/30/2013; Fort Calhoun Station, Integrated Resident and Regional Report; Radiological Hazard Assessment and Exposure Control; ALARA Planning and Controls; In-plant Airborne Radioactivity Control and Mitigation

The report covered a six-week period of inspection by resident and regional inspectors. Two Green non-cited violations of significance and one finding 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 cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Occupational and Public Radiation Safety

Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.11.1, which was the result of a radiation protection technician failing to monitor changing radiological conditions and post a high radiation area. As a result, an operator entered a high radiation area with dose rates greater than 100 millirems per hour without knowing the dose rates in the area. In response, licensee representatives immediately surveyed the affected areas, posted the area as a high radiation area, documented the occurrence in the corrective action program as Condition Report 2013-02603, and prepared an Apparent Cause Analysis Report.

The failure to post a high radiation area with dose rates greater than 100 millirems per hour is a performance deficiency. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation because the failure exposed workers to higher than anticipated radiation dose rates. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This violation had a cross-cutting aspect in the human performance area, work practices component, because the licensee failed to hold proper pre-job briefings and follow station procedures requiring monitoring of changing radiological conditions to ensure personnel did not proceed in the face of unexpected circumstances [H.4(a)] (Section 2RS01).

Green. The inspectors reviewed a self-revealing finding of very low safety significance involving the licensee's failure to adequately plan and control work activities relating to the Chemical Volume Control System piping to maintain doses ALARA. Specifically, the work was "fast-tracked," which caused issues with the understanding of the work scope and led to the mismanagement of foreseeable aspects in the ALARA planning process. In response, the licensee evaluated their ALARA process and entered the issue into their corrective action program as Condition Report 2012-20825.

The failure to maintain doses ALARA due to inadequate planning was a performance deficiency. The performance deficiency is more than minor because it negatively affected the Occupational Radiation Safety Cornerstone, in that inadequate planning led to increased collective radiation dose for occupational workers. This resulted in a finding because no violation of regulatory requirements occurred, but the licensee failed to meet a self-imposed standard. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the finding. The finding had very low safety significance because although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. This finding had a cross-cutting aspect in the human performance area, associated with the work control component, because the licensee failed to communicate, coordinate, and cooperate with each other during an activity in which interdepartmental communication was necessary [H.3(b)] (Section 2RS02).

Green. The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 20.1501(a), which was the result of an inadequate survey to evaluate potential hazards from airborne radiation. As a result, a radiation worker received an uptake of 10 millirem in unintended dose. In response, the licensee immediately surveyed the area, performed whole body counts on the affected worker, decontaminated the affected worker, and documented the occurrence in the corrective action program as Condition Report 2012-19508.

The failure to perform a survey to evaluate the radiological conditions and potential hazard from airborne radiation is a performance deficiency. The licensee had the ability to foresee a possible intake if the survey had been properly performed. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This violation had a cross-cutting aspect in the human performance area, work control component, because the licensee failed to maintain communication during activities in which interdepartmental coordination was necessary to assure plant and human performance, such as the need to keep personnel apprised of changing radiological conditions that affected work activities [H.3.(b)] (Section 2RS03).

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

The station remained in Mode 5 with the fuel in the spent fuel pool for the entire inspection period.

1. REACTOR SAFETY

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on June 18, 2013, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and the Emergency Operating Facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

These activities constitute completion of one emergency preparedness drill observation samples, as defined in Inspection Procedure 71114.06-05.

b. Findings
No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

This area was inspected to: (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures, (2) verify the licensee is properly identifying and reporting Occupational Radiation Safety Cornerstone performance indicators, and

(3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

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 the radiation protection manager, radiation protection supervisor, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements, and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the Occupational Radiation Safety Cornerstone

- The hazard assessment program, including a review of the licensee's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels

- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions

- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiologically controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability

- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage, and contamination controls; the use of electronic dosimeters in high noise areas; dosimetry placement; airborne radioactivity monitoring; controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools; and posting and physical controls for high radiation areas and very high radiation areas

- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls 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 71124.01-05.

b. Findings

Introduction. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.11.1 due to a radiation protection technician failing to post a high radiation area with dose rates greater than 100 millirems per hour, which resulted in an equipment operator receiving a dose rate alarm. The violation had very low safety significance (Green).

Description. On February 7, 2013, the licensee performed a drain down of the reactor cavity in accordance with procedure OI-FH-3, Revision 23, "Refueling Water Transfer from Refueling Pool to SIRWT." The procedure required that the Radiation Protection (RP) technician be notified to monitor the area downstream of valve WD-843 for changing radiological conditions during the drain down. Although this notification was made, RP failed to monitor the change in radiological conditions in the Corridor 4 Vent area. Survey M-20130205-1 was used to brief licensee personnel including an equipment operator, prior to the job commencement. It showed the maximum dose rate for the area as 3.7 millirems per hour at 30 centimeters. As the drain down transpired, the general area dose rates increased to a maximum of 380 millirems per hour, as shown on Survey M-20130207-1.

The pre-job brief was conducted utilizing the "Basic Brief" format. This brief was performed by the Licensed Operator and the Control Room Supervisor. This brief contained a question that asked if other work groups were needed to be present/involved. If this was answered as "Yes", then the use of a formal (FC-1349) brief was required. However, the Licensed Operator and control Room Supervisor failed to answer "Yes" and did not identify that RP was required to be present as well. Thus, the Chemistry-RP Supervisor and RP technician were not present at the pre-job briefing, which led to them not being adequately involved in the reactor cavity drain down process.

As a result of the RP technician's failure to monitor the change in radiological conditions and appropriately post the affected area as a high radiation area, an equipment operator received a dose rate alarm while in the process of securing the valve lineup from the reactor cavity to the Safety Injection Refueling Water Tank. The operator received a dose rate alarm of 188 millirems per hour versus a set point of 125 millirems per hour. He immediately stopped work and left the area as required by his Radiation Work Permit 11-0020-4, Task5, "Auxiliary Building Operator."

The occurrence was documented in CR 2013-02603. The licensee immediately surveyed the affected areas, posted the area as a high radiation area, evaluated the occurrences of the event, enhanced their procedural guidance, and coached the licensee personnel involved.

Analysis. The failure to post a high radiation area with dose rates greater than 100 millirems per hour is a performance deficiency. The requirement not met was Technical Specification 5.11.1. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation because the failure exposed workers to higher than anticipated radiation dose rates. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance (Green) because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This violation had a cross-cutting aspect in the human performance area, work practices component, because the licensee failed to hold proper pre-job briefings and follow station procedures requiring monitoring of changing radiological conditions to ensure personnel did not proceed in the face of unexpected circumstances [H.4(a)].

Enforcement. Technical Specification 5.11.1 requires, in part, that each high radiation area (as defined in § 20.1601) in which the intensity is 1000 millirems per hour or less be barricaded and conspicuously posted as a high radiation area. Contrary to the above, on February 7, 2013, licensee personnel failed to post an area with dose rates greater than 100 millirems per hour, but less than1000 millirems per hour, as a high radiation area. Specifically, an equipment operator entered the Corridor 4 Vent area, an unposted high radiation area, with a maximum dose rate of 380 millirems per hour while securing the valve lineup from the reactor cavity drain-down activity. The actual dose rates were significantly higher than he was briefed on, by a factor of 100. Thus, the operator received a dose rate alarm of 188 millirems per hour. The licensee immediately surveyed the area, posted the area as a high radiation area, and performed an evaluation. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's corrective action program as CR 2013-02603. NCV 05000285/2013005-01; "Failure To Post A High Radiation Area Resulting In A Dose Rate Alarm."

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). 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 and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements

- ALARA work activity evaluations/postjob reviews, exposure estimates, and exposure mitigation requirements

- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies

- Records detailing the historical trends and current status of tracked plant source terms, and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry

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

- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

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 71124.02-05.

b. <u>Findings</u>

<u>Introduction</u>. The inspectors reviewed a self-revealing finding because the licensee did not adequately plan and control work activities relating to the Chemical Volume Control System (CVCS) piping to maintain doses ALARA. The finding had very low safety significance (Green).

<u>Description</u>. While reviewing the ALARA Work Package 12-AP-002, "CVCS Piping Modification," the inspectors identified that the licensee's ALARA Planning and Control program failed to prevent unplanned and unintended collective doses related to the modification of welds in the Chemical Volume Control System. Specifically, the work was "fast-tracked" and planning activities that typically are performed sequentially were performed simultaneously. This caused issues with the understanding of the work scope and led to the mismanagement of foreseeable aspects of the work.

One of the main tasks of the job was to modify Chemical Volume Control System welds by replacing socket welds with butt welds. The difficulty of this task was not communicated to the ALARA planning group and thus was underestimated. Specifically, a multiplier that is commonly used by ALARA Planning was used when calculating the "wrench time," characterized as the time spent working on the equipment. The use of this multiplier caused the work hours used to calculate the dose estimate to be approximately one-third of the actual hours needed. In addition to the wrench time being underestimated, the ALARA planning group did not have a full understanding of the work scope. Again, this was partially due to miscommunication between work groups.

Inadequate pre-job walk downs performed by the contract workers resulted in missed locations where work was needed, and therefore, these tasks were not planned.

Some other less foreseeable causes for the dose overages were higher dose rates than expected and rework due to craft error. These issues led to dose estimates which were too low to cover the project and resulted in significant unplanned collective exposure. The actual collective dose for the project was 17.022 rem. This is compared to the initial estimate of 9.365 rem. The licensee added dose to the radiation work permit three times throughout the course of the project, and discovered some of the work scope inadequacies and time underestimation as a result of the dose tracking significantly higher than was expected.

The occurrence was documented in CR 2012-20825. The licensee evaluated their ALARA planning process, enhanced their tracking system, and trained personnel.

Analysis. The failure to maintain doses ALARA due to inadequate planning was a performance deficiency. The performance deficiency is more than minor because it negatively affected the Occupational Radiation Safety Cornerstone in that inadequate planning led to increased collective radiation dose for occupational workers. This resulted in a finding because no violation of regulatory requirements occurred, but the licensee failed to meet a self-imposed standard. Additionally, the finding was more than minor because it was similar to Example 6(i) in Manual Chapter 0612, Appendix E, "Examples of Minor Issues," because it resulted in a collective dose greater than 5 person-rem and the actual dose exceeded the estimated dose by greater than 50 percent. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the finding. The finding had very low safety significance because although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. This finding had a cross-cutting aspect in the human performance area, associated with the work control component, because the licensee failed to communicate, coordinate, and cooperate with each other during an activity in which interdepartmental communication was necessary to assure plant and human performance [H.3(b)].

Enforcement. No violation of regulatory requirements occurred with this issue. However, the licensee did establish several corrective actions as a result of this issue, including a more descriptive tracking system for estimating dose, and training on when to use a wrench time multiplier. This finding is documented in the licensee's corrective action program as CR 2012-20825: FIN 05000285/2013005-02, "Failure to Adequately Plan and Control Work Activities to Maintain Doses ALARA."

2RS03 In-plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

This area was inspected to verify that in-plant airborne concentrations are being controlled consistent with ALARA principles, and the use of respiratory protection devices on-site does not pose an undue risk to the wearer. 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:

- The licensee's use, when applicable, of ventilation systems as part of its engineering controls

- The licensee's respiratory protection program for use, storage, maintenance, and quality assurance of NIOSH certified equipment, qualification and training of personnel, and user performance

- The licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, status of SCBA staged and ready for use in the plant and associated surveillance records, and personnel qualification and training

- Audits, self-assessments, and corrective action documents related to in-plant airborne radioactivity control and mitigation since the last inspection

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

These activities constitute completion of the one sample as defined in Inspection Procedure 71124.03-05.

b. Findings

Introduction. The inspectors reviewed a self-revealing, non-cited violation of 10 CFR Part 20.1501(a), for failure to perform an adequate survey prior to the commencement of abrasive work in Room 25, Railroad Siding, of the Chemical and Volume Control System (CVCS) area. The violation had very low safety significance (Green).

Description. On December 7, 2012, at 11:51 p.m., a worker exiting the radiation controlled area alarmed the portal monitor. The worker was surveyed and contamination of less than 100 net counts per minute (ncpm) was found on his face. Procedures required all facial contaminations to be followed up with a whole body count (WBC). He was given a WBC and a decontamination shower. After additional WBCs, clearing the portal monitor and consultation with the RP supervisor, the worker was released. The WBCs showed that the worker received an intake of 10.4 millirem committed effective dose equivalent (CEDE). This dose was unintended.

A cause evaluation performed by the licensee determined that the affected worker had received the internal exposure between 1:24 p.m. and 7:55 p.m. on December 7, 2012, while observing and supporting other craft performing abrasive job duties in Room 25, Railroad Siding, of the CVCS area. It was confirmed that the affected worker was not wearing a lapel or respiratory protection due to the Total Effective Dose Equivalent (TEDE) ALARA evaluation that was performed.

Procedure RP-301, Revision 48, “ALARA Planning/RWP Development and Control,” states for ALARA planning, “if grinding, burning, cutting, milling, or similar activities are going to occur, then an evaluation of the need for process or engineering controls and/or respiratory protection is to be performed.” The TEDE ALARA evaluation meets the regulatory definition of a survey and relies, in part, on smears of the contamination in the work area given in units of disintegrations per minute per hundred centimeters squared ($dpm/100cm^2$). The respiratory protection screening evaluation (FC-RP-301-6, Revision 6) uses a three step process. Step 1 informs the licensee to use historical information of the DAC-Hr calculation and use it as current actual activity only if the same conditions are present. If there is no historical information, or conditions have changed, Step 2 estimates the airborne concentration and evaluates the engineering controls based on contamination smears in the area. In Step 3, the TEDE ALARA evaluation is used to determine if a respirator is required for the duties being performed. The threshold for performing Step 3 is if the Step 2 activities on contaminated surfaces are greater than or equal to 10,000 $dpm/100cm^2$ (beta-gamma) smearable, or greater than or equal to 20 $dpm/100cm^2$ (alpha) smearable.

Radiation Work Permit 12-2510-7, Task 7, “Modify CVCS valves and associated tasks,” requires that ALARA is informed of air sample results to verify or complete a TEDE ALARA evaluation. However, this communication to ALARA was not done, which led to inaccurate smearable information for the TEDE ALARA evaluation. The work performed on December 7, 2012, used a November 30, 2012, respiratory protection screening evaluation. The activities used on that survey were 1000 $dpm/100cm^2$ (beta-gamma) smearable, and 0.76 $dpm/100cm^2$ (alpha) smearable. These are both below the threshold requiring the additional engineering controls or respiratory protection, such as the respirator, per Step 3 of FC-RP-301-6 and RP-301. Smears of the work area were also performed on December 6, 2012, prior to the job on December 7, 2012, during the actual job, and after the portal monitor alarmed on December 7, 2012. The highest activities from those swipes are in the table shown below. The table demonstrates that inappropriate survey data was used in the TEDE ALARA evaluation performed, and the actual activities would warrant adequate engineering and/or respiratory controls.

DATE	LOCATION	BETA-GAMMA ACTIVITY ($dpm/100cm^2$)	ALPHA ACTIVITY ($dpm/100cm^2$)
December 6, 2012	HE-2 block	100,000	
	Weld stand	60,000	50
	Mill machine	22,000	
December 7, 2012, 3:29 p.m.	Weld machine	99,400	38.9
	Weld machine	14,500	27.8
December 7, 2012, 11:06 p.m.	End of RC-375	52,709	32
	Milling machine	10,891	23

Milling rig	21,216	27

The inspectors concluded that the failure to perform an adequate TEDE ALARA evaluation (i.e., survey) violated regulatory requirements. The licensee entered this issue into their corrective action program as CR 2012-19508.

Analysis. The failure to perform a survey to evaluate the radiological conditions and potential hazard from airborne radiation is a performance deficiency. The requirement not met was 10 CFR Part 20.1501(a). The licensee had the ability to foresee a possible intake if the survey had been properly performed. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Additionally, the violation was more than minor because it was similar to Example 6(f) in Manual Chapter 0612, Appendix E, "Examples of Minor Issues," because an inadequate radiation survey of existing radiological conditions led to an unintended occupational dose of greater than 10 millirem. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance (Green) because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This violation had a cross-cutting aspect in the human performance area, work control component, because the licensee failed to maintain communication during activities in which interdepartmental coordination was necessary to assure plant and human performance, such as the need to keep personnel apprised of changing radiological conditions that affected work activities [H.3.(b)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 20.1501(a) states, in part, that "Each licensee shall make or cause to be made, surveys of areas that are reasonable under the circumstance to evaluate the potential radiological hazards of the radiation levels and residual radioactivity detected." Contrary to the above, on December 7, 2012, the licensee failed to perform a survey of the area to evaluate potential hazards of the radiation levels and residual radioactivity detected. Specifically, the licensee performed an inadequate TEDE ALARA evaluation (i.e. survey) where grinding, milling, and welding was occurring, resulting in airborne radioactivity and unintended dose of 10.4 mrem. The licensee immediately surveyed the area, performed WBC's on the affected worker, and decontaminated the affected worker. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's corrective action program as CR 2012-19508. NCV 05000285/2013005-03; "Failure To Survey Resulting In Unintended Occupational Dose."

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)

Cornerstone: Occupational Radiation Safety

.1 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the fourth quarter of 2012 through the first quarter of 2013. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation areas (greater than 1 rem/hr) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 mrem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hr) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of the occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.2 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the fourth quarter of 2012 through the first quarter of 2013. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (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.

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.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 05000285/2012-009-00 Inoperable Equipment Due to Lack of Environmental Qualifications

On July 23, 2012, the licensee reported that no analysis or evaluation could be found to address why the original Electrical Environmental Qualification (EEQ) evaluation of peak Main Steam Line Break conditions remain valid. The current analysis of record established that containment temperatures remain above the Loss of Coolant Accident (LOCA) peak temperature for substantially longer (220 seconds versus 60 seconds) but at a lower temperature (347.9 degrees Fahrenheit vs. 401 degrees Fahrenheit). The licensee determined that the longer dwell times could result in a more adverse impact on environmentally qualified equipment such as cables, solenoids, radiation monitors, and limit switches. The corrective actions were to complete a cause analysis and a thermal lag analyses for the EEQ equipment in containment.

On May 8, 2013, the licensee, completed the thermal lag analyses, FC08145, “Transient Thermal Analysis for Equipment in FCS Containment,” Revision 0, for the EEQ equipment assuming the conditions from the current analysis of record for the MSLB. The analysis confirmed that the equipment is qualified for the MSLB conditions reflected in the current analysis of record. Additionally, the licensee is in the process of updating the EEQ files to reflect calculation FC08145 and the current MSLB analysis of record.

In addition to this particular environmental qualification defieciency, the licensee has identified others that are currently being evaluated and resolved pertaining to equipment both inside and outside containment. The NRC will be reviewing the adequacy of licensee corrective actions for these issues prior to startup.

The licensee event report is closed with two licensee identified violations. The enforcement aspects of these violation are discussed in Section 4OA7.

.2 (Closed) Licensee Event Report 05000285/2012-011-00: Emergency Diesel Inoperability Due to Bus Loads During a LOOP

On August 6, 2012, the licensee notified the NRC that a potential issue existed concerning Emergency Diesel Generators (EDG) capability to power required loads in certain loss of offsite power (LOOP) scenarios, specifically those scenarios during which a Loss of Coolant Accident (LOCA) or Main Steam Line Break (MSLB) does not occur. In a LOOP without a concurrent accident signal, the 480 V load shed that would be initiated as a direct result of the accident signal does not occur. Therefore, the electrical load that the Emergency Diesel

Generators must pick up when the Emergency Diesel Generator output breaker automatically closes could be significantly higher than the dead load that exists in an accident scenario. If one Emergency Diesel Generator were inoperable due to maintenance or other activities and the electrical distribution system loading conditions were such that the other Emergency Diesel Generator could have reached the output breaker trip settings during a LOOP event, both Emergency Diesel Generators would be inoperable and the licensee would have to take action per Technical Specification (TS) 2.0.1. It is conservative to assume that such conditions existed for those Emergency Diesel Generator outages that exceeded six hours. However, actions were not taken for two inoperable Emergency Diesel Generators per the requirements of TS 2.0.1, resulting in operation or condition prohibited by Technical Specification.

The corrective actions associated with this licensee event report were to perform a cause analysis and perform an evaluation of the load present on the 480V engineered safety feature busses during a loss of offsite power, without a concurrent accident signal, with addition of non-safety loads that may not be load shed during the event, and on emergency core cooling pump running in test mode. The licensee also completed interim corrective actions to limit the operation of the number of engineered safety pumps on the 480V busses while they were crosstied during Mode 5.

On February, 26, 2013, the licensee issued calculation EA12-011, “Diesel Generator Operation during Non-DBA Loss of Offsite Power Scenarios, EDS - Design Base 3.0 - DGT” Revision 0. This calculation concluded that highest peak current seen by the emergency diesel generators would be 874 amps. This current would occur on emergency diesel generator DG1, with a high pressure safety injection pump and non-safety related loads tied to the respective 480V bus. The licensee concluded that 874 amps would cause the emergency diesel generator output breaker to trip if the overcurrent relay was set at its worst case setting of 864 amps (960 +/-10% amps). The licensee reviewed the calibration records for the overcurrent relay over the previous twenty years and determined that the as-found settings were never below 874 amps. Based on this information, the licensee concluded that the emergency diesel generators were operable and retracted the licensee event report on February 28, 2013.

The licensee implemented a corrective action to change the overcurrent relay calibration procedure to further restrict the as-left tolerance of the emergency diesel generator output breaker overcurrent relay to 960 amps +/- 5%. Additionally, the licensee plans to add safety-related undervoltage protection to the 480V busses to ensure that all non-safety related loads are shed.

This licensee event report is closed with a previously identified NRC non-cited violation in Inspection Report 05000285/2013008.

.3 <u>(Closed) Licensee Event Report 05000285/2012-016-00: Unanalyzed Charging System Socket Welds to the Reactor Coolant System</u>

“On July 17, 2012, Fort Calhoun Station identified a deficiency as part of the analyses being performed in support of resolution to the question as to whether some Class I pipe was potentially not qualified as Class 1. CR (CR) 2012-07724 documented that preliminary results from an Thermal Fatigue Analysis on the chemical and volume control system (CVCS) concluded that; 1) The 2 inch socket welded fittings on Reactor Coolant System (RCS) branch line piping cannot be qualified, and 2) The 2 inch charging lines are considered to be in an unanalyzed condition exceeding thermal cycle fatigue and seriously degraded.

"A cause analysis was completed and determined that the CVCS Class 1 piping was constructed using socket welded fittings.

"CVCS was declared inoperable. The normal charging headers to the RCS are classified as inoperable until further evaluations or required repairs are performed. CVCS has been isolated to prevent any further thermal transients to the suspect welds. In addition, the affected waste disposal piping line which was scoped under the extent of condition is being addressed under CR 2012-12184. Contingency actions have already been taken to secure the letdown line so no thermal stress may be introduced to those socket welds. The affected welds will be replaced prior to plant heatup."

The licensee event report is closed. Revision 1 of this licensee event report was submitted on June 25, 2013.

.4 <u>(Opened) Licensee Event Report 05000285/2012-016-01: Unanalyzed Charging System Socket Welds to the Reactor Coolant System</u>

"On July 17, 2012, Fort Calhoun Station (FCS) identified a deficiency as part of the analyses being performed in support of resolution to the question as to whether some Class I pipe was potentially not qualified as Class 1. CR 2012-07724 documented that preliminary results from an Thermal Fatigue Analysis on the chemical and volume control system (CVCS) concluded that; 1) The 2 inch socket welded fittings on Reactor Coolant System (RCS) branch line piping cannot be qualified, and 2) The 2 inch charging lines are considered to be in an unanalyzed condition exceeding thermal cycle fatigue and seriously degraded.

"A cause analysis was completed and determined that the CVCS Class 1 piping was constructed using socket welded fittings. CVCS was declared inoperable. The normal charging headers to the RCS are classified as inoperable until further evaluations or required repairs are performed. CVCS has been isolated to prevent any further thermal transients to the suspect welds. In addition, the affected waste disposal piping line which was scoped under the extent of condition is being addressed under CR 2012-12184. Contingency actions were taken to secure the letdown line so no thermal stress may be introduced to those socket welds. The affected welds have been replaced and thermal fatigue calculations have been completed.

.5 <u>(Closed) Licensee Event Report 05000285/2013-002-00: CVCS Class 1 & 2 Charging Supports are Unanalyzed</u>

"On January 25, 2013, while preparing for a charging and letdown piping modification, it was identified that the assumed stiffness values of the supports are higher than originally documented. As a result, the supports are much more rigid and result in overstressing a portion of the Class 2 charging (CH-2014) piping. Failure of the piping could result in release of radioactive material through penetration M-3 due to the lack of double isolation. The plant was shutdown and defueled when this condition was identified and entered in to the corrective action program.

“Further analysis determined that the new calculated stiffness values over stressed the piping, which could result in pipe failure in the charging Class 2 piping during a seismic event. The Class 1 portion of the charging and Class 1 and 2 portions of the letdown piping were unaffected.

“A cause analysis is in progress, the results of which will be published in a supplement to this LER.”

The licensee event report is closed. Revision 1 of this licensee event report was submitted on June 28, 2013.

.6 (Opened) Licensee Event Report 05000285/2013-002-01: CVCS Class 1 & 2 Charging Supports are Unanalyzed

“On January 25, 2013, while developing the modification to replace a portion of the Chemical and Volume Control System (CVCS) piping in containment, it was identified that the original piping supports had no calculations of record. When the calculations for the replacement piping were completed using the original support configuration, an overstress condition of the new piping was identified that directly related to the old piping. This condition would have made the original piping susceptible to failure during a seismic event. Portions of the Class 1 charging and letdown lines were affected. The plant was shutdown and defueled at the time of discovery.

“The causal analysis determined that station construction project management failed to ensure that initial construction procedures for design and installation of small bore piping systems and supports were in compliance with USA Standard B31.7, Nuclear Power Piping.

“Fort Calhoun Station will analyze and modify the supports as required to conform to the piping load requirements of the various operational Modes prior to entering that Mode.”

.7 (Opened) Licensee Event Report 05000285/2013-007-00: Containment Air Cooling Units (VA-16A/B) Seismic Criteria

“CR 2013-02260 identified that a summary structural analysis (FC03901) indicated that VA-15A/B (Containment Cooler/Filter Unit A/B plenum was overstressed by 100 percent and that VA-16A/B (Containment Air Cooling Unit A/B plenum) was also overstressed. At the time of discovery, FC03901 indicated that VA-15A/B required cross-bracing, which was added and the equipment was considered operable. Since VA-16A/B was overstressed, they were considered inoperable.

“During an inspection, the NRC questioned the operability determination provided in CR 2013-02260 for VA-15A/B and VA-16A/B due to the seismic criteria not being met. The station responded that since the cross-bracing had been added to VA-15A/B, they were considered operable. However, VA-16A/B did not meet the current licensing basis and they were considered inoperable. On April 6, 2013, CR 2013-07674 was initiated and a reportability evaluation determined that the condition was reportable. The unit was defueled when the condition was identified.

“A causal analysis is in progress, the results of which will be published in a supplement to this LER.”

.8 (Opened) Licensee Event Report 05000285/2013-008-00: Previously Installed GE IAV Relays Failed Seismic Testing

“On April 11, 2013, the test results of seven General Electric (GE) IAV relays indicated that three safety-related, seismically qualified, relays did not pass seismic testing. The condition was entered in to the Station's corrective action program. A causal analysis determined that the failure was caused by the control spring in the relay contacting either the disk or the drag magnet during seismic testing resulting in a short. A wire used to support the spring was not installed in the relays that failed the testing, allowing the control spring to sag and make electrical contact.

“There are a total of 45 GE IAV relays identified in the plant, of which 32 are safety-related. Twelve of these had previously been replaced and two more were verified to have the support wire installed. The remaining 18 relays will be inspected, and if the support wire is missing, they will be replaced prior to plant startup.”

.9 (Opened) Licensee Event Report 05000285/2013-009-00: Tornado Missile Vulnerabilities

“While performing an extent of condition review for the condition identified in LER 2013-005-0, Control Room HVAC Modification Did Not Properly Address Safety Consequences, additional potential tornado missile vulnerabilities have been identified. These currently include the intake structure removable hatches, Room 81 roof openings, auxiliary feedwater steam driven pump exhaust stack, diesel fuel oil tanks vent stack and fill line, FO-1/FO-10, raw water pump cable pull boxes, and diesel generator exhaust stacks, DG-1/DG-2. These additional interactions appear to have existed since initial licensing. They do not appear to be a result of plant modifications as was the case with the control room air handlers. At the time of discovery, the unit was shutdown and defueled.

“The station is performing extent of condition reviews associated with LER 2013-005-0. The station will determine the scope and resolutions to mitigate the currently identified interactions as well as any additional interactions prior to plant restart.”

4OA4 IMC 0350 Inspection Activities (92702)

Inspectors continued implementing IMC 0350 inspection activities, which include follow-up on the restart checklist items contained in the Confirmatory Action Letter (CAL) issued February 26, 2013 (EA-13-020, ML 13057A287). The purpose of these inspection activities is to assess the licensee’s performance and progress in addressing its implementation and effectiveness of Fort Calhoun Station’s Integrated Performance Improvement Plan (IPIP), significant performance issues, weaknesses in programs and processes, and flood restoration activities.

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

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

.2 Flood Restoration and Adequacy of Structures, Systems, and Components

Section 2 of the Restart Checklist contains those items necessary to ensure that important structures, systems and components affected by the flood and safety significant structures, systems and components at Fort Calhoun Station are in appropriate condition to support safe restart and continued safe plant operation. Section 2 reviews will also include an assessment of how the licensee appropriately addressed the NRC Inspection Procedure 95003 key attributes as described in Section 6.

.b System Readiness for Restart Following Extended Plant Shutdown

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

.i System Health Reviews

The purpose of this item is to validate structures, systems, and components conform to the licensing and design basis. The NRC will evaluate the system health reviews conducted by Fort Calhoun Station. These include comprehensive system walkdowns and reviews of key information regarding system health (e.g. commitments, open and closed condition reports, open and closed work orders, preventative maintenance activities, modifications, operating experience, violations of NRC requirements, open change-initiating documents, open operational concerns, etc.)

(1) Inspection Scope

The inspectors assessed the startup readiness of the below listed systems. These assessments consisted of reviews of open work orders, condition reports, temporary modifications and operator challenges, and a review of the maintenance rule status of those components scoped in the maintenance rule. The review of open work orders and condition reports did not include those items that were related to equipment service life (ESL), which is being evaluated in section 3.d.2 of the Restart Checklist Basis Document. The inspectors also conducted a system walkdown using the guidance contained in Inspection Procedure 71111.04, Equipment Alignment.

For the system walkdown, the inspectors reviewed plant procedures, including abnormal and emergency, drawings, USAR and vendor manuals to determine the correct lineup and visually inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation.

(a) Demineralized and Potable Water Systems

The inspectors noted no open work orders that require completion prior to reactor startup. The inspectors reviewed 15 open condition reports for the Demineralized and Potable Water Systems, and concluded that they were not required to be completed prior to reactor startup.

There were no open temporary modifications installed and no open operator challenges in the Demineralized and Potable Water Systems.

For the system walkdown, the inspectors reviewed plant procedures, including abnormal and emergency, drawings, USAR and vendor manuals to determine the correct lineup and visually inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. While the majority of the systems were not in service, the system walkdown allowed the inspectors to observe the material condition of the components of the system.

(b) Circulating Water System

The inspectors noted nine open work orders that require completion prior to reactor startup. Two of these are required prior to loading fuel in the core, four are required prior to plant heatup, and three are required prior to reactor criticality. The inspectors will continue to track these work orders to completion.

The inspectors noted 107 open condition reports for the Circulating Water System, 11 of which are coded as being required prior to startup. For the condition reports not required prior to reactor startup, the inspectors sampled these condition reports to ensure that they were not required to be completed prior to reactor startup. The inspectors will continue to track the 11 condition reports that are required to be completed prior to reactor startup.

There were no open temporary modifications installed in the Circulating Water System.

There were three open operator challenges on the circulating water system, only one of which was a tier 1 or tier 2 operator challenge. This operator challenge involves the replacement of CW-16B, Circ Water Pump Interconnecting Sluice Gate, which is scheduled to be replaced at the next refueling outage.

For the system walkdown, the inspectors reviewed plant procedures, including abnormal and emergency, drawings, USAR and vendor manuals to determine the correct lineup and visually inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. While the majority of the Circulating Water System was not in service, the system walkdown allowed the inspectors to observe the material condition of the components of the system.

The inspectors reviewed the maintenance rule aspects of the Circulating Water System. The inspectors noted that two components were being monitored in 10CFR50.65(a)(1). Circulating Water Pump CW-1A was placed into (a)(1) for exceeding availability criteria prior to the 2011 outage. The pump exhibited excessive packing leakage, and it could not be repaired prior to exceeding availability criteria. Rive Sluice Gate CW-14E was placed into (a)(1) for failing to close during a surveillance. The inspectors verified that the licensee had established appropriate goals and corrective actions for these two components.

(c) Fire Protection System

The inspectors assessed the startup readiness of the Fire Protection System. This assessment consisted of a review of open work orders, condition reports, temporary modifications and operator challenges, and a review of the maintenance rule status of those components scoped in the maintenance rule. The inspectors also conducted a system walkdown using the guidance contained in Inspection Procedure 71111.04, Equipment Alignment. The inspectors conducted their assessment of the Circulating Water System on June 18 and 19, 2013.

The inspectors noted seven open work orders that require completion prior to reactor startup. Four of these are required prior to plant heatup and three are required prior to reactor criticality. The inspectors will continue to track these work orders to completion.

The inspectors noted 93 open condition reports for the Fire Protection System, four of which are coded as being required prior to startup. For the condition reports not required prior to reactor startup, the inspectors sampled these condition reports to ensure that they were not required to be completed prior to reactor startup. The inspectors will continue to track the four condition reports that are required to be completed prior to reactor startup.

There were no open temporary modifications installed in the Fire Protection System. There were also no open operator challenges on the Fire Protection System.

For the system walkdown, the inspectors reviewed plant procedures, including abnormal and emergency, drawings, USAR and vendor manuals to determine the correct lineup and visually inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. While the majority of the Fire Protection System was not in service, the system walkdown allowed the inspectors to observe the material condition of the components of the system.

The inspectors reviewed the maintenance rule aspects of the Fire Protection System. The inspectors noted that no components were being monitored in 10CFR50.65(a)(1), however the diesel Fire Pump, FP-1B, was below 50% margin. The inspectors verified that the licensee was taking appropriate actions to monitor the availability of FP-1B.

These activities constitute completion of items 2.b.1.11, 2.b.1.12 and 2.b.1.27 as described in Restart Checklist Basis Document. While these systems are not currently ready for restart, the inspectors determined that the licensee is adequately addressing, tracking, and correcting issues required for system readiness. In addition, the inspectors have one final opportunity to ensure the items described above are completed, in Section 7.b of the Restart Checklist Basis Document.

(2) Findings

No findings were identified.

.iv Impact of Sub-Surface Water on Soils and Structures

Fort Calhoun Station was subjected to flood waters for several months. The licensee will perform an assessment to evaluate:

- functionality of site SSCs affected by the flood
- condition of subsurface soil

- floodwater impacts on subsurface SSCs.

The NRC will review, monitor, and inspect activities associated with the geo-technical surveys and assessments, and ensure proper actions were taken for the associated corrective actions and any identified safety concerns in this area.

(1) CAL Action Item 1.2.1.3

i. Inspection Scope

The purpose of Action Item 1.2.1.3 was to repair any structural damage identified in the intake structure. These items were required to be completed prior to RCS temperature >210°F.

The licensee performed visual inspection of walls, floors, ceilings and internal structural members. These inspections were documented in field reports and included in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors conducted visual walkdowns of the facility in September 2011 and again in May 2013. The field notes were reviewed, as well as comparison to prior plant records completed for the structures monitoring program. The inspectors verified that no structural damage has been identified in the intake structure.

This activity constitutes completion of Action Item 1.2.1.3 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(2) CAL Action Item 1.2.3.57

i. Inspection Scope

The purpose of Action Item 1.2.3.57 was to repair Independent Spent Fuel Storage Installation (ISFSI) as necessary. This item is a long-term action item.

The licensee performed visual inspection of structural pad and individual casks. These inspections were documented in field reports and included in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors conducted visual walkdowns of the facility in September 2011 and again in May 2013. The field notes were reviewed, and the inspectors verified that no structural damage has been identified at the ISFSI.

This activity constitutes completion of Action Item 1.2.3.57 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(3) CAL Action Item 1.2.3.79

i. Inspection Scope

The purpose of Action Item 1.2.3.79 was to repair the Independent Spent Fuel Storage Installation (ISFSI) haul route. This item is a long-term action item.

The licensee performed visual inspection and ground penetrating radar (GPR) along the ISFSI haul route. The results indicated no structural deficiencies in the subgrade or finish grade. The results are documented in field reports and included in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors reviewed the field notes, GPR records, and conducted a visual walkdown of the haul route in May 2013. The inspectors verified that no structural deficiencies have been identified along the ISFSI haul route.

This activity constitutes completion of Action Item 1.2.3.79 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(4) CAL Action Item 2.1.1.1

i. Inspection Scope

The purpose of Action Item 2.1.1.1 was to ensure underground fire protection piping is intact with no unacceptable voids present near the piping. These items were required to be completed prior to RCS temperature >210°F.

The licensee performed visual inspection, hand probing, and ground penetrating radar (GPR) along the fire protection piping installations. The results indicated no structural deficiencies in the subgrade or finish grade. These inspections were documented in field reports and included in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors reviewed the field notes, GPR records, and conducted an above-ground visual inspection of the fire protection installation paths in May 2013. The inspectors verified that there are no indications of voids near the piping installations.

This activity constitutes completion of Action Item 2.1.1.1 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(5) CAL Action Item 2.1.1.5

i. Inspection Scope

The purpose of Action Item 2.1.1.5 was to verify soil compaction and moisture content in the areas of underground fire protection main header ring and attached piping is in accordance with NFPA requirements. These items were required to be completed prior to RCS temperature >210°F.

The licensee performed compaction testing and ground penetrating radar (GPR) along the fire protection piping installations. The results indicated soil compaction satisfactory to support the piping and clarified that NFPA standards are met for operation of the lines. These inspections were documented in field reports and included in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors reviewed the field notes, GPR records, and conducted an above-ground visual inspection of the fire protection installation paths in May 2013. The inspectors verified that there are no indications of voids near the piping installations.

This activity constitutes completion of Action Item 2.1.1.5 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(6) CAL Action Items 3.3.1.1 and 3.3.1.2

i. Inspection Scope

The following action items and purposes are related to the review of site facilities for potential damage due to flooding.

- 3.3.1.1 - inspect underground raw water, emergency diesel generator fuel oil tanks and piping using ground penetrating radar (GPR)
- 3.3.1.2 – assess the results of the GPR

These items were required to be completed prior to RCS temperature >210°F.

The licensee performed visual inspection and ground penetrating radar (GPR) in the locations of the underground raw water and emergency diesel generator fuel oil tanks and piping. The results indicated no potential voids or softened zones in the soils surrounding the structures. These results of the survey were documented in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors reviewed the field notes, GPR records, and conducted visual inspection of the areas above the tanks and piping in May 2013. The inspectors verified that there are no indications of voids of softened zones near these installations.

This activity constitutes completion of Action Items 3.3.1.1 and 3.3.1.2 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(7) CAL Action Items 4.1.1.12, 4.1.1.13, 4.1.1.14, 4.1.1.15, 4.1.1.16, 4.1.1.17, 4.1.1.20, 4.1.1.21, 4.1.1.22, 4.1.1.23, 4.1.1.24

i. Inspection Scope

The following action items and purposes are related to the review of site facilities for potential damage due to flooding.

- 4.1.1.12 - review structure design features to assess potential for damage.
- 4.1.1.13 – inspect structures
- 4.1.1.14 and 4.1.1.20 – assess post-inundation condition of structures
- 4.1.1.15 and 4.1.1.22 – prepare remediation alternatives (if appropriate)
- 4.1.1.16 and 4.1.1.23 – create report of findings
- 4.1.1.17 and 4.1.1.24 – review findings and recommendations and document results
- 4.1.1.20 – inspect non-Class 1 Priority 1 Structures

These items were required to be completed prior to RCS temperature >210°F.

The licensee performed review of design drawings and construction modification documents for all structures on the plant site. Additionally, the licensee conducted visual inspection of all site structures. A summary of this research, evaluation of potential flooding damage for each facility, and recommended remediation actions is documented in the Fort Calhoun Station Flood Recovery

Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors reviewed the historical design drawings, construction modification documents, and the findings and recommended remediation actions in the referenced report regarding non-Class 1 structures on site. The inspectors also inspected non-Class 1 Priority 1 structures and found no evidence of degradation as a result of the flood.

This activity constitutes completion of Action Items 4.1.1.12, 4.1.1.13, 4.1.1.14, 4.1.1.15, 4.1.1.16, 4.1.1.17, 4.1.1.20, 4.1.1.21, 4.1.1.22, 4.1.1.23, and 4.1.1.24 as described in Confirmatory Action Letter EA-13-020.

ii. Findings

No findings were identified.

(8) CAL Action Item 4.1.1.25

i. Inspection Scope

The purpose of Action Item 4.1.1.25 was to complete a post-flood river channel evaluation. These items were required to be completed prior to RCS temperature >210°F.

The licensee completed a technical memorandum on April 19, 2012, for the Missouri River Gage Analysis. The memo sites changes in water surface elevations along the Missouri River in the vicinity of Fort Calhoun Station, as well as changes in gage heights.

The inspectors reviewed the technical memorandum, however, at this time, the licensee has not presented documentation evaluating if the described channel degradation has an impact on the plant's ability to access the Missouri River water through the intake structure for one-through cooling during low river flows.

Action Item 4.1.1.25 as described in Confirmatory Action Letter EA-13-020 remains open.

ii. Findings

No findings were identified.

(9) CAL Action Items 4.1.1.30 and 4.1.1.32

i. Inspection Scope

The following action items and purposes are related to the impacts of flooding on the Turbine Building and remediation efforts associated with loose soils:

- 4.1.1.30 - verify no structural or geotechnical impact to Turbine Building and Auxiliary Building/Containment as a result of the 2011 flood (HDR Rev 1)
- 4.1.1.32 - remediation of the Turbine Building and Class 1 structure void

These items were required to be completed prior to Reactor Coolant System temperature >210°F.
The licensee performed visual inspection of the facilities as well as periodic building elevation surveys to verify no settlement of the structures. Soil boring testing, and static and dynamic cone penetration testing was completed to locate and characterize the extent of loose soils. Remediation efforts under the Turbine Building included relining of the broken sump lines, and under the maintenance shop a new pile was driven to bedrock to support a new column installation. A summary of these inspection efforts, testing, and remediation descriptions are documented in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

The inspectors reviewed the referenced report, observed activities associated with the soil penetration testing, and inspected the new maintenance column installation and new turbine building sump line repairs. At this time, the licensee has not been able to show successful completion of the remedial action of repair to broken subgrade piping in the turbine building basement, which is believed to be the cause of groundwater intrusion and areas of loose soils beneath non-Class 1 structures to date. Since the report concluded that failure of structures as a result of the flood would not be credible after successful remediation of those pipes, closure of these items is not possible until completion of those actions.

Action Items 4.1.1.30 and 4.1.1.32 as described in Confirmatory Action Letter EA-13-020 remains open.

ii. Findings

No findings were identified.

(10) CAL Action Item 4.1.2.2, 4.1.2.01, and 4.1.2.02

i. Inspection Scope

The following action items and purposes are related to the impacts of flooding on the Turbine Building and remediation efforts associated with loose soils:

- 4.1.2.2 - verify no geotechnical or structural impact to site structures
- 4.1.2.01 - update geotechnical-structural assessment summary based on results of follow-on inspection and testing (HDR Rev 2)
- 4.1.2.02 - verify no structural or geotechnical impact to Turbine Building and Auxiliary Building/Containment as a result of the 2011 flood (HDR Rev 2)

These items were required to be completed prior to reactor being critical.

The licensee performed visual inspection of the facilities as well as periodic building elevation surveys to verify no settlement of the structures. Soil boring testing, and static and dynamic cone penetration testing were completed to locate and characterize the extent of loose soils. These inspections were documented in field reports and included in the Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment Revision 2 report completed by HDR and dated May 4, 2012.

Final penetration testing in small annulus space between the Turbine Building and the Auxiliary Building indicates that the loose soils do not extend beyond the Turbine Building footprint into the more densely compacted, vibroflotated foundation of the Class 1 structures (Auxiliary Building and Containment). In lieu of core drilling the auxiliary building floor slab, a nuclear qualified consultant constructed an analysis to show even with a loss of some foundation soil, the seismic response of the Class 1 structures remains within the design basis criteria. To date, there are outstanding review comments by the NRC senior geotechnical engineer regarding this analysis that still need to be addressed.

The inspectors conducted visual walkdowns of the facility in September 2011 and again in May 2013. The field notes were reviewed, as well as comparison to prior plant records completed for the structures monitoring program. The inspectors verified that there are no indications of structural damage in site structure, however, the licensee's geotechnical and structural assessment reports contain open-ended statements requiring resolution of the turbine building sump piping and structural analysis beneath the Class I structures before closure.

This activity constitutes completion of Action Item 4.1.2.01 as described in Confirmatory Action Letter EA-13-020. Action Items 4.1.2.2, and 4.1.2.02 remain open.

ii. Findings

No findings were identified.

(11) CAL Action Items 4.1.3.10

i. Inspection Scope

The purpose of Action Item 4.1.3.10 was remediation of the loose soils area under the Turbine Building and Class 1 structures if required. This was a long-term action item.

The licensee completed relining of the subgrade pipes in the basement of the Turbine Building.

While on site in May 2013, the inspectors observed considerable water flowing in the turbine building sump pipes during elevated river levels without identifiable equipment operating in the area. The licensee to date has not been able to demonstrate successful repair of the subgrade pipes to prevent groundwater intrusion and further degradation of soils under the structures.

Action Item 4.1.3.10 as described in Confirmatory Action Letter EA-13-020 remains open.

ii. Findings
No findings were identified.

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction (TI) 2515/187, Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

As documented in Inspection Report 05000285/2012011, the inspectors accompanied the licensee on a sampling basis, during their flooding and seismic walkdowns, to verify that the licensee's walkdown activities were conducted using the methodology endorsed by the NRC. These walkdowns were being performed at all sites in response to a letter from the NRC to licensees, entitled "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340).

Enclosure 4 of the letter requested licensees to perform external flooding walkdowns using an NRC-endorsed walkdown methodology (ADAMS Accession No. ML12056A050). Nuclear Energy Industry (NEI) document 12-07 titled, "Guidelines for Performing Verification Walkdowns of Plant Protection Features," (ADAMS Accession No. ML12173A215) provided the NRC-endorsed methodology for assessing external flood protection and mitigation capabilities to verify that plant features, credited in the CLB for protection and mitigation from external flood events, are available, functional, and properly maintained.

During this inspection period the inspectors independently performed their walkdown in the Auxiliary Feedwater system pump room and verified that the required flood protection features were in place. In addition, the inspectors verified that any degraded, nonconforming, or unanalyzed conditions were entered into the Corrective Action Program. Additional inspection activities associated with this TI were documented in Inspection Report 05000285/2012011.

b. Findings

A finding associated with the failure to properly scope all the pertinent external flood protection features in accordance with industry guidance NEI 12-07, was identified and documented in Inspection Report 05000285/2012011.

No NRC-identified or self-revealing findings were identified during this inspection period.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On June 6, 2013, the inspectors presented the results of the radiation safety inspections to Mr. L. Cortopassi, Site Vice President, 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 July 17, 2013, the inspectors presented the inspection results to Mr. L. Cortopassi, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector 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 violations of very low safety significance (Green) or Severity Level IV were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy, for being dispositioned as a Non-Cited Violation.

.1 Title 10 CFR Part 50.49, paragraph (d), states, in part, the applicant or licensee shall prepare a list of electric equipment important to safety. In addition, the applicant or licensee shall include the information in paragraphs (d)(1), (2), and (3) of this section for this electric equipment important to safety in a qualification file. The applicant or licensee shall keep the list and information in the file current and retain the file in auditable form for the entire period during which the covered item is installed in the nuclear power plant or is store for future use. Contrary to 10 CFR 50.49, paragraph (d), prior to December 12, 2012, the licensee failed to keep the list and information in the electric equipment qualification file current for electric equipment inside containment when the analysis of record for the Main Steam Line Break accident changed. The licensee entered this condition into the corrective action program as Condition Report 2012-03718. The finding is of very low safety significance, because it is a design or qualification deficiency confirmed not to result in the loss of operability or functionality of the system.

.2 Title 10 CFR Part 50.72, paragraph(b)(3)(ii)(B), states, in part, the licensee shall notify the NRC as soon as practical and in all cases within eight hours of the occurrence of any of the following event or condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety. Contrary to 10 CFR 50.72 (b)(3), from December 13, 2011, to July 23, 2012, the licensee failed to make a notification within eight hours of identifying a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety when the licensee determined that various electrical components inside containment were not analyzed for harsh environment conditions caused by a postulated main steam line break. The licensee entered this condition into the corrective action program as CR 2012-03718. Consistent with the NRC Enforcement Policy, this violation is considered a Severity Level IV violation.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Brehm, Engineer, Radiation Protection
L. Cortopassi, Site Vice President
S. Coufal, Health Physicist, Radiation Protection
S. Dixon, Health Physicist, Radiation Protection
E. Durboraw, Health Physicist, Radiation Protection
P. Gunderson, Supervisor, Radiological Operations
T. Maine, Manager, Radiation Protection
E. Matzke, Licensing Engineer, Regulatory Affairs
W. McCall, Health Physicist, Radiation Protection
S. Ustohal, Dosimetry Technician, Radiation Protection
D. Whisler, Supervisor, ALARA
J. Ruth, Director, Site Training
A. Stella, Manager, Shift Operations
C. Cameron, Supervisor Regulatory Compliance
E. Plautz, Supervisor, Emergency Planning
J. Bousum, Manager, Emergency Planning and Administration
K. Ihnen, Manager, Site Nuclear Oversight
K. Kingston, Manager, Chemistry
M. Ferm, Manager, System Engineering
M. Prospero, Plant Manager
R. Cade, Manager, Operations Training
R. Hugenroth, Supervisor, Nuclear Assurance
S. Miller, Manager, Design Engineering
S. Swanson, Manager, Operations
T. Orth, Director, Site Work Management
T. Simpkin, Manager, Site Regulatory Assurance
V. Naschansy, Director, Site Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000285/2012-016-01	LER	Unanalyzed Charging System Socket Welds to the Reactor Coolant System
05000285/2013-002-01	LER	CVCS Class 1 & 2 Charging Supports are Unanalyzed
05000285/2013-007-00	LER	Containment Air Cooling Units (VA-16A/B) Seismic Criteria
05000285/2013-008-00	LER	Previously Installed GE IAV Relays Failed Seismic Testing

Opened

05000285/2013-009-00	LER	Tornado Missile Vulnerabilities

Opened and Closed

05000285/2013005-01	NCV	Failure To Post A High Radiation Area Resulting In A Dose Rate Alarm
05000285/2013005-02	FIN	Failure to Adequately Plan and Control Work Activities to Maintain Doses ALARA
05000285/2013005-03	NCV	Failure To Survey Resulting In Unintended Occupational Dose

Closed

05000285/2012-009-00	LER	Inoperable Equipment Due to Lack of Environmental Qualifications
05000285/2012-011-00	LER	Emergency Diesel Inoperability Due to Bus Loads During a LOOP
05000285/2012-016-00	LER	Unanalyzed Charging System Socket Welds to the Reactor Coolant System
05000285/2013-002-00	LER	CVCS Class 1 & 2 Charging Supports are Unanalyzed
2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

LIST OF DOCUMENTS REVIEWED

PROCEDURES

NUMBER	TITLE	REVISION
EPIP-OSC-1	Emergency Classification	48
TBD-EPIP-OSC-1A	Recognition Category A - Abnormal Rad Levels/Radiological Effluent	2
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

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

PROCEDURES

NUMBER	TITLE	REVISION
OI-FH-3	Refueling Water Transfer from Refueling Pool to SIRWT	023
OI-FH-3	Refueling Water Transfer from Refueling Pool to SIRWT	025
RP-202	Radiological Surveys	043
RP-203	Air Sample Collection and Analysis	020
RP-204	Radiological Area Controls	063
RP-206	Radioactive Material Handling	022
RP-306	Hot Spot Identification and Tracking	021
RP-307	Use and Control of Temporary Shielding	021
RP-405	Radioactive Source Inventory Control	016
RPP	Radiation Protection Plan	029
RPI-1	Personnel Monitoring and Decontamination	016
RP-ST-RM-0002	Radioactive Material Sources Surveillance	008
SO-G-101	Radiation Worker Practices	039

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
2012-5258	Pre-June 3, 2013 NRC Inspection Self-Assessment	May 14, 2013

RADIOLOGICAL SURVEYS

NUMBER	TITLE	DATE
M-20130205-1	Quarterly for Corridor 4 Vent Area	February 5, 2013
M-20130207-1	Corridor 4 Vent Area Going HRA	February 7, 2013
M-20121206-5	Job Coverage for Room 25, Rail Road Siding	December 6, 2012
M-20121207-2	Job Coverage for Room 25, Rail Road Siding	December 7, 2012
M-20121207-3	Follow Up Survey for Room 25, Rail Road Siding	December 7, 2012

CONDITION REPORTS

2012-19280	2013-00426	2013-01683	2013-02871	2013-04147
2013-05027	2013-05985	2013-05479	2012-19142	2013-06475
2013-07695	2012-19926	2013-02507	2012-20910	2013-08669
2012-19508	2013-03132	2013-02603	2012-19314	2013-04138
2013-05760	2013-05661	2013-05622	2013-00960	2013-06944
2012-19707	2012-08476	2013-10064	2012-19928	2013-09680
2013-01398	2013-01738	2013-02595	2013-04117	2013-04957
2013-09501	2013-00129	2013-05211	2013-06663	2013-03660
2012-20129	2013-07224	2013-02311	2013-11868	

RADIATION WORK PERMITS

NUMBER	TITLE	REVISION
13-3561	Radiography Duties for HPSI Run Out modification	00
11-0020	Operations Support for the 2011 RFO	00
12-2510	Modify CVCS Valves and Associated Tasks, Task 7	03
13-2550	EC 56872 CVCS Pipe Supports	02

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE
6080	2013 National Source Tracking System – Annual Inventory Reconciliation	January 13, 2013
FC-RP-301-6	TEDE/ALARA Screening/Evaluation (RWP 12-2510)	November 30, 2012
FC-RP-ST-RM-2	Radioactive Source Inventory and Leak Test	November 13, 2012
FC-1217	Non-Fuel Material Spent Fuel Pool Inventory Ledger	October 2012

Section 2RS02: Occupational ALARA Planning and Controls

PROCEDURES

NUMBER	TITLE	REVISION
RPP	Radiation Protection Plan	29
SO-G-116	Station ALARA Program	1
RP-AD-300	ALARA Program	28a
RP-301	ALARA Planning/RWP Development and Control	48

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

TITLE	DATE
Fort Calhoun Station Five-Year Dose Reduction Plan	2013-2017

CONDITION REPORTS

2012-18843	2012-18554	2012-18882	2012-19170	2012-20480
2012-20740	2013-00162	2013-00082	2013-00305	2013-00383
2013-00426	2013-00842	2013-01738	2013-02507	2013-02595

2013-02834	2013-03131	2013-05095	2013-07224	2013-07444
2013-08068	2013-08678	2013-10381	2012-20825	2013-10066
2013-05105	2013-05614	2013-03791	2012-20046	2013-06878
2013-07155	2013-00328	2013-08310	2013-09623	2013-02483
2013-10542				

ALARA WORK PACKAGES

NUMBER	TITLE
12-AP-02	CVCS Piping Modification
11-AP-12	Reactor Head Maintenance
13-AP-02	CVCS Piping Supports

Section 2RS03: In-plant Airborne Radioactivity Control and Mitigation

PROCEDURES

NUMBER	TITLE	REVISION
RP-216	Area Radiation Monitor Alarm Setpoint Validation	008
RP-219	Personal Air Monitoring	007
RP-227	Determination of Alpha Levels and Monitoring	000
RP-301	ALARA Planning/RWP Development and Control	048
RP-442	Operation of the Eberline Model AMS-4 Air Monitor	004
RP-466	Operation and Response Test of the iSolo Alpha/Beta Counting System	000
RP-502	Use of Respiratory Protection Equipment	019
RP-503	Set up and Maintenance of Respiratory Airline Distribution Equipment	011
RP-507	Inspection and Maintenance of Respiratory Protection Equipment	024
RP-509	Respirator Fit Testing	023
RP-510	Operation of Respirator Cleaning Equipment	009
RP-511	Recharging of SCBA Cylinders	009

Section 2RS03: In-plant Airborne Radioactivity Control and Mitigation

PROCEDURES

NUMBER	TITLE	REVISION
RP-513	SCBA Air Compressor Fill System Operation	017
RP-671	Personal Air Monitoring and DAC-hr Tracking	000
RP-AD-500	Respirator Protection Program	019
RP-CP-02-0405	Calibration of the iSOLO Alpha/Beta Counting System	001
RW-700	HEPA Ventilation and HEPA Vacuum Program	008
RW-706	Leak Testing of HEPA Filtered Vacuum Cleaners and/or HEPA Ventilation Units	003
IC-CP-02-0610	Calibration of Eberline AMS-4 Air Monitoring System	005
FHA-EA9-001	Fire Hazards Analysis Manual	016

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
RP-ST-RM-0002	Radioactive Material Sources Surveillance	8
2012-5258	Pre-June 3, 2013 NRC Inspection Self-Assessment	May 14, 2013

CONDITION REPORTS

2012-03767	2012-03847	2012-09370	2012-10595	2012-16037
2012-16766	2012-18154	2012-18977	2012-19005	2012-19067
2012-19069	2012-19429	2012-19508	2012-20637	2012-20650
2013-00113	2013-00867	2013-01722	2013-03805	2013-04106
2013-04942	2013-05719	2013-06019	2013-06130	2013-06328
2013-06345	2013-06959	2013-10145	2013-10575	

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	DATE
NRC-08-0070	Fort Calhoun Station, Unit No. 1 – Issuance of Amendment RE: Control Room Envelope Habitability	June 30, 2008
Lic-07-004	Application to Revise Tech Specs Regarding Control Room Envelope Habitability in Accordance with TSTF-448, Revision 3, Using the Consolidated Line Item Improvement Process	May 16, 2007
FC-RP-507-18	MMR/SCBA/Nightfighter Heads Up Display Check Logs	2011-2013
FC-RP-507-8	Face Piece Check Log	2011-2013
	Trace Analytics, LLC Analysis of Air/Gas Quality	2011-2013
	H.E.P.A. Filter Leak Test Report – BalCon	2011-2013

Section 4OA1: Performance Indicator Verification

CONDITION REPORTS

2013-04833	2013-07513

Section 4OA2: Problem Identification and Resolution (71152)

PROCEDURES

NUMBER	TITLE	REVISION
FCSG-24-1	Condition Report Initiation	5
FCSG-24-3	Condition Report Screening	7
FCSG-24-4	Condition Report and Cause Evaluation	7
FCSG-24-6	Corrective Action Implementation and Condition Report Closure	10
SO-R-2	Condition Reporting and Corrective Action	53b

Section 4OA3: Event Follow-Up

PROCEDURES

NUMBER	TITLE	REVISION / DATE
SP-CP-08-D1-IAC	Calibration of the Time Overcurrent Relays for Diesel Generator Number One (50-51/D1)	5
ERPG-EAG-01	Engineering Recovery Process Guide – Engineering Assurance Group	1

CONDITION REPORTS

2013-03424	2011-10129	2012-03718	2012-00546	2012-07496

CALCULATIONS

NUMBER	TITLE	REVISION / DATE
OPPD-E-12-002	Study to Ensure Acceptable Diesel Generator Performance During Non-DBA Loss of Offsite Power Scenarios	0
FC 08145	Transient Thermal Analysis for Equipment in FCS Containment	1

Section 4OA4: IMC 0350 Inspection Activities (92702)

CONDITION REPORTS

200504013	2010-0090	2010-0267	2010-0826	2010-2364
2010-3984	2011-0831	2011-2472	2011-2667	2011-2946
2011-3101	2011-3414	2011-3837	2011-4014	2011-4134
2011-4170	2011-4309	2011-4646	2011-4771	2011-4830
2011-4871	2011-4902	2011-4982	2011-4996	2011-5012
2011-5027	2011-5114	2011-5173	2011-5215	2011-5254
2011-5377	2011-5508	2011-5531	2011-5700	2011-5749
2011-5750	2011-5782	2011-5805	2011-5810	2011-5819
2011-5932	2011-5944	2011-6003	2011-6085	2011-6218
2011-6235	2011-6268	2011-6298	2011-6308	2011-6478

2011-6546	2011-6557	2011-6605	2011-6614	2011-6623
2011-6670	2011-6671	2011-6712	2011-6721	2011-6968
2011-6997	2011-6999	2011-6999	2011-7091	2011-7181
2011-7199	2011-7223	2011-7319	2011-7371	2011-7377
2011-7404	2011-7512	2011-7571	2011-7634	2011-7669
2011-7948	2011-7985	2011-8123	2011-8169	2011-8254
2011-8963	2011-9420	2011-9684	2011-10028	2011-10383
2011-10468	2012-04456	2012-08452	2012-10699	2012-10700
2012-10739	2012-10914	2012-11133	2012-13058	2012-14118
2012-14211	2012-17330	2012-17787	2012-18190	2012-18219
2012-18229	2012-19051	2012-19568	2012-20673	2012-20870
2012-20885	2013-00039	2013-00610	2013-01220	2013-01226
2013-01700	2013-02355	2013-03183	2013-03260	2013-03380
2013-03385	2013-03386	2013-03437	2013-03863	2013-04046
2013-04190	2013-04401	2013-04755	2013-04759	2013-04798
2013-05064	2013-05764	2013-06299	2013-06522	2013-06810
2013-06871	2013-07210	2013-07488	2013-07557	2013-07623
2013-08514	2013-10170	2013-10222	2013-10319	2013-10823
2013-10941	2013-10985	2013-10994	2013-10995	2013-10997
2013-10998	2013-11043	2013-11327	2013-11363	2013-11440
2013-11533	2013-11711	2013-11714	2013-11860	2013-11896
2013-11930	2013-11936	2013-12047	2013-12051	2013-12061
2013-12125	2013-12126	2013-12127	2013-12142	2013-12217
2013-12218	2013-12219	2013-12256	2013-12258	

WORK ORDERS

360983	464541	464542	464543	471135
486227	421700	287130	427292	448411
445544	462404	482788	483355	483795
456998				

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
	Fort Calhoun Station Flood Recovery Action Plan 4.1 Plant and Facility Geotechnical and Structural Assessment	0, 1, 2, 3
	HDR Technical Memorandums on Missouri River Gage Analysis dated 11-4-11 HDR Technical Memorandum Missouri River Gage Evaluation Data Collection	10/20/2011
12Q4067-RPT-001	2011 Stephenson & Associates Post-Flood Analysis	8/20/2012
EA 12-017	Post 2011 Flood Assessment of the Containment and Auxiliary and Turbine Buildings	1
12Q4067-C-002	Seismic Evaluation of FCS Auxiliary Building and Containment Structure	10/25/2012
12Q4067-C-004	Seismic Analysis of Turbine Building Piles for Degraded Soil Conditions	10/23/2012
12Q4067-RPT-001	Post 2011 Flood Assessment of the Containment, Auxiliary and Turbine Buildings	10/29/2012
12Q4067-C-003	Seepage Analysis of Turbine, Auxiliary, and Containment Buildings	10/02/2012
STM07	System Training Manual – Circulating Water	39
STM13	System Training Manual – Demineralized Water	25
STM21	System Training Manual – Fire Protection	29

Section 4OA5: Other Activities

PROCEDURES

NUMBER	TITLE	REVISION / DATE
PLDBD-CS-56	External Flooding	1
USAR 9.8	Auxiliary Systems: Raw Water System	31
SDBD-STRUC-503	Intake Structure	12

CONDITION REPORTS

2012-15475 CR 2012-16901

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
	Flood Protection Features Walkdown List	10/04/2012
NEI 12-07	Walkdown Record Forms for West Wall of Intake Structure	09/21/2012
NEI 12-07	Walkdown Record Form – Topography walkdown	05/2012
NEI 12-07	Walkdown Record Forms for East Wall of Air Compressor Room	09/21/2012