



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

February 11, 2008

D. J. Bannister
Site Director
Omaha Public Power District
Fort Calhoun Station FC-2-4
P.O. Box 550
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SUBJECT: FORT CALHOUN STATION - NRC INTEGRATED INSPECTION
REPORT 05000285/2007005

Dear Mr. Bannister:

On December 31, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 17, 2008, 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.

This report documents three NRC-identified findings and one self-revealing finding that were evaluated under the risk significance determination process as having very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. Additionally, two licensee-identified violations which were determined to be of very low safety significance are listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspectors at the Fort Calhoun Station facility.

In accordance with 10 CFR Part 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 document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Jeff Clark, P.E.
Chief, Project Branch E
Division of Reactor Projects

Docket: 50-285
License: DPR-40

Enclosure:
NRC Inspection Report 05000285/2007005
w/attachment: Supplemental Information

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 R:\ REACTORS\ FCS\2007\FC 2007-005 RP-JDH.wpd ML080420524

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02/07/2008	02/04/2008	02/07/2008	02/11/2008

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-285
License: DPR-40
Report: 05000285/2007005
Licensee: Omaha Public Power District
Facility: Fort Calhoun Station
Location: Fort Calhoun Station FC-2-4 Adm.
P.O. Box 399, Highway 75 - North of Fort Calhoun
Fort Calhoun, Nebraska
Dates: October 1 through December 31, 2007
Inspectors: J. Hanna, Senior Resident Inspector
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N. O'Keefe, Senior Reactor Inspector
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Approved By: Jeff Clark, Chief, Project Branch E
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000285/2007005; 10/01/2007 - 12/31/2007; Fort Calhoun Station, Integrated Resident and Regional Report, Adverse Weather Protection, Flood Protection Measures, Maintenance Effectiveness, Operability Evaluations, Permanent Plant Modifications.

The report covered a 3-month period of inspection by resident inspectors and announced inspections by senior resident inspectors, resident inspectors, emergency preparedness inspectors, senior operations engineers, health physicists, and senior reactor inspectors. Four Green noncited violations 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." 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 3, dated July 2000.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green noncited violation of Technical Specification 5.8.1.a associated with the failure to have an adequate procedure to implement cold weather protective actions. Specifically, Procedure OI-EW-1, "Extreme Weather," Revision 13, did not provide adequate instructions for operators to mitigate the effects of cold weather on plant equipment. This failure resulted in the station not taking actions necessary to ensure availability of equipment prior to the onset of extremely cold weather. This violation was entered into the licensee's corrective action program as Condition Report 2007-4931.

This finding was determined to be greater than minor in that it was associated with the "Protection Against External Factors" attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Appendix A, and determined that it was of very low safety significance (Green), because it did not result in an actual loss of safety function and did not screen as potentially risk significant due to external events. This finding has a crosscutting aspect in the area of Human Performance, specifically, the Resources attribute (H.2.c) in that the licensee failed to have complete, accurate and up-to-date procedures (Section 1R01).

- Green. A noncited violation of 10 CFR 50.65(a)(1) was identified for failure to implement corrective action to correct the condition causing unreliability of the raw water pumps and strainers. Specifically, the cause evaluation concluded that debris from the river (sand and pebbles) was getting into the intake and blocking the pump suction or overwhelming the strainer when an idle pump was started. A recommendation to periodically inspect and clean the area around

raw water pumps was not carried forward in the (a)(1) improvement plan, and the other corrective actions did not correct this cause. Failure to implement this recommendation may have contributed to a repeat functional failure on April 29, 2007. This issue was entered into the licensee's corrective action program under CR 2007-5004. This finding has a crosscutting aspect in Problem Identification and Resolution because the corrective actions did not fully address the identified causes (P.1.c).

Failure to implement timely preventive maintenance to monitor for and remove debris buildup near safety related raw water pumps in response to this system's unreliable performance and classification as Maintenance Rule (a)(1) was a performance deficiency. This finding is more than minor because the raw water system was already experiencing degraded performance, and if left uncorrected, would continue to experience degraded reliability. This finding is not suitable for evaluation using the Significance Determination Process because the performance deficiency did not cause the degraded equipment performance. This is a Category II finding per Inspection Procedure 71111.12, so it was determined to have very low safety significance (Green) by management judgment per Manual Chapter 0609, Appendix M (Section 1R12.2).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the failure to translate calculation results into procedures to maintain the component cooling water system operational. Specifically, the position of Valve HCV-497, component cooling water heat exchangers bypass line isolation valve, was not being controlled. The failure to control HCV-497 position had the potential of not meeting design basis requirements to mitigate an accident during warm river water temperatures. This condition has been entered into the licensee's corrective action program as Condition Report 2007-2864.

This finding was greater than minor because it was associated with the configuration control attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Appendix A, and determined that it was of very low safety significance (Green) because it did not result in an actual loss of safety function and did not screen as potentially risk significant due to external events (Section 1R15).

- Green. A Green self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion III, and "Design Control" occurred when the licensee failed to use the correct breaker trip set points in design calculations. This error, when translated into plant equipment, affected both Emergency Diesel Generator 1 fuel oil transfer pumps and rendered one of them inoperable. This violation was entered into the licensee's corrective action program as Condition Report 2007-4401. This finding has a crosscutting aspect in the area of human performance because the licensee failed in their use of human error prevention techniques, such as self and peer checking (H.4.a). This caused the licensee to incorporate

incorrect design basis information (i.e., breaker set points) into plant equipment (Section 1R17).

The failure to correctly translate the correct set points into design calculations is a performance deficiency. The finding is more than minor because it is associated with the design control attribute of the mitigating systems cornerstone objectives and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Appendix A, and determined that it was of very low safety significance (Green) because it did not result in an actual loss of safety function and did not screen as potentially risk significant due to external events.

B. Licensee-Identified Violations

Violations of very low safety significance, which 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 corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The unit began this inspection period in Mode 1 at full rated thermal power and operated at 100 percent until December 9, 2007, when power was decreased to 98 percent for control rod testing. Reactor power was increased to 100 percent on December 9, 2007, where the plant remained until the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Susceptibilities

a. Inspection Scope

The inspectors completed a review of the licensee's readiness for seasonal susceptibilities involving extreme low temperatures. The inspectors: (1) reviewed plant procedures, the Updated Safety Analysis Report (USAR), and Technical Specifications (TS) to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the systems listed below to ensure that adverse weather protection features (heat tracing, space heaters, weatherized enclosures, temporary chillers, etc.) were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program to determine if the licensee identified and corrected problems related to adverse weather conditions.

- November 20, 2007, review of preparations for extreme cold weather for the Auxiliary Building

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction: The inspectors identified a Green noncited violation (NCV) of Technical Specification 5.8.1.a associated with the failure to have an adequate procedure to implement cold weather protective actions. Specifically, Procedure OI-EW-1, "Extreme Weather," Revision 13, did not provide adequate instructions for operators to mitigate the effects of cold weather on plant equipment. This failure resulted in the station not taking actions necessary to ensure availability of equipment prior to the onset of extremely cold weather.

Description: On November 19, 2007, the inspectors commenced walkdowns of the auxiliary building and verification of compliance with procedure OI-EW-1. The inspectors noted that the station had started performing certain steps in the procedure, but had not completed it at that time. On the evening of November 20, 2007, extremely cold weather moved into the greater Omaha area. On November 30, 2007, the inspectors noted the following:

- A sustained period (approximately 3 days) of temperatures less than 32°F started on the evening of November 20, 2007.
- The licensee did not formally initiate the cold weather procedure until early in the morning of November 21, 2007, though some steps had been accomplished.
- As of November 30, 2007, multiple steps in the cold weather procedure were still not complete. These included, but were not limited to, actions such as (a) verification that the auxiliary boiler was available, (b) turning on local space heaters in the auxiliary building to mitigate cold temperatures, and (c) requesting security officers to notify Operations staff of cold temperatures inside buildings.
- Procedure OI-EW-1 stated that “Steps may be omitted at the discretion of the Shift Manager.”

The inspectors concluded that the licensee had failed to take the full actions necessary to protect mitigating equipment from extremely cold weather, and that Procedure OI-EW-1 was inadequate in that it allowed those actions not to be complete.

Analysis: The inspectors determined that the failure to have adequate cold weather protection guidance was a performance deficiency. This finding was determined to be greater than minor in that it was associated with the “Protection Against External Factors” attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Appendix A, and determined that it was of very low safety significance (Green), because it did not result in an actual loss of safety function and did not screen as potentially risk significant due to external events. This finding has a crosscutting aspect in the area of Human Performance, specifically, the Resources attribute (H.2.c) in that the licensee failed to have complete, accurate and up-to-date procedures.

Enforcement: Technical Specification 5.8.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, 1978. Regulatory Guide 1.33, Appendix A, recommends written procedures for combating emergencies and other significant events such as acts of nature. Contrary to the above, licensee Procedure OI-EW-1, “Extreme Weather,” Revision 13 did not meet this requirement in that it failed to protect plant equipment from extreme cold weather. This condition existed from November 20, 2007, at the onset of extreme cold weather until it was identified to the licensee on November 30, 2007. Because this violation is of very low

safety significance and has been entered into the licensee's corrective action program as Condition Report 2007-4931, this violation is being treated as an NCV, consistent with Section VI.A of the Enforcement Policy: NCV 05000285/2007005-01, "Inadequate Cold Weather Procedure."

1R04 Equipment Alignments (71111.04)

.1 Partial Equipment Walk-downs

a. Inspection Scope

The inspectors: (1) walked down portions of the two risk important systems listed below and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walk down to the licensee's USAR and Corrective Action Program (CAP) to ensure problems were being identified and corrected.

- December 5, 2007, Diesel Generator 1 while Diesel Generator 2 was out-of-service for surveillance testing
- December 20, 2007, Turbine-Driven Auxiliary Feedwater train while the Motor-Driven Auxiliary Feedwater train was out-of-service for maintenance.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors walked down the six plant areas listed below to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were

established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the USAR to determine if the licensee identified and corrected fire protection problems.

- November 7, 2007, Room B-7 (Diesel-Driven Auxiliary Feedwater Pump Room) Fire Area 46.3
- November 14, 2007, Room 23 (Spent Regenerant Tank & Pump Area) Fire Area 3
- November 24, 2007, Room 63 (Diesel Generator Room 1) Fire Area 35A
- November 24, 2007, Room 64 (Diesel Generator Room 2) Fire Area 35B
- December 5, 2007, Room 57 (Group 1 MCC Area) Fire Area 34C
- December 5, 2007, Room 82 (Turbine Building Mechanical Equipment Room, el. 1036') Fire Area 46.1

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Observation

a. Inspection Scope

On November 24, 2007, the inspectors observed a fire brigade drill to evaluate the readiness of licensee personnel to prevent and fight fires, including the following aspects: (1) the number of personnel assigned to the fire brigade, (2) use of protective clothing, (3) use of breathing apparatuses, (4) use of fire procedures and declarations of emergency action levels, (5) command of the fire brigade, (6) implementation of pre-fire strategies and briefs, (7) access routes to the fire and the timeliness of the fire brigade response, (8) establishment of communications, (9) effectiveness of radio communications, (10) placement and use of fire hoses, (11) entry into the fire area, (12) use of fire fighting equipment, (13) searches for fire victims and fire propagation, (14) smoke removal, (15) use of pre-fire plans, (16) adherence to the drill scenario, (17) performance of the post-drill critique, and (18) restoration from the fire drill. The licensee simulated a fire outside of the turbine building near the Emergency Diesel Generators, rendering them inoperable.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

.1 Semi-annual Internal Flooding

a. Inspection Scope

The inspectors: (1) reviewed the USAR, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving internal flooding; (2) reviewed the USAR and CAP to determine if the licensee identified and corrected flooding problems; (3) inspected underground bunkers/manholes to verify the adequacy of (a) sump pumps, (b) level alarm circuits, (c) cable splices subject to submergence, and (d) drainage for bunkers/manholes; (4) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (5) walked down the one area listed below to verify the adequacy of: (a) equipment seals located below the flood line, (b) floor and wall penetration seals, (c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms, and control circuits, and (f) temporary or removable flood barriers.

- September 7 to December 31, 2007, Auxiliary Building, Corridor 4 and Corridor 26 Areas

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction. The inspectors identified an unresolved item associated with a potentially inadequate procedure for internal flooding events. Specifically, the licensee's Abnormal Operating Procedures did not provide adequate instructions for operators to mitigate the effects of an internal flood from a pipe break (e.g., fire main) on plant equipment.

Description. On September 7, 2007, the inspectors commenced walkdowns of the auxiliary building to determine if vulnerabilities existed to internal flooding events. The inspectors noted that the station had watertight doors at the entrances to the Safety Injection Pump Areas (Rooms 21 and 22) and Spent Regenerant Tank and Pump Area (Room 23). The inspectors questioned the operators whether there were instructions, procedures, etc. that would direct the closure of the watertight doors during a flooding event. The inspectors found that the only applicable procedure was ARP-AI-100/A50, "Annunciator Response Procedure A50 Local Annunciator A50 Waste Disposal," Revision 10. The inspectors further questioned what procedures directed general actions during an internal flooding event. While some abnormal operating procedures (AOPs) had guidance for the event where a specific system might rupture, (e.g., raw water piping) there were no procedures for nonsafety related piping ruptures (e.g., fire water system). The inspectors concluded that if these systems, or other systems not

already specifically addressed in the AOPs, were to break there may not be sufficient direction to operators on how to respond (e.g., tripping the plant, securing water tight doors, protecting equipment, stopping the leak).

The inspectors concluded additional information was needed associated with the station licensing and design bases with regard to internal and external flooding risks. The licensee initiated Condition Report 2007-0128 to assemble additional information and evaluate this issue.

Analysis: The inspectors determined that additional information was required to determine the acceptability of the licensee's treatment of internal flooding events.

Enforcement: Additional information was needed to determine whether a violation of regulatory requirements occurred. Pending further review of additional information provided by the licensee, this issue is being treated as an unresolved item: URI 05000285/2007005-02, "Potential Inadequate Internal Flooding Procedure."

1R11 Licensed Operator Requalification Program (71111.11)

.1 Annual Inspection

a. Inspection Scope

The inspectors reviewed the annual operating examination test results for 2007. Since this was the first half of the biennial requalification cycle, the licensee was not required to administer a written examination. These results were assessed to determine if they were consistent with NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, guidance and Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process," requirements. This review included the test results for a total of 10 crews composed of 52 licensed operators, which included: shift-standing senior operators, staff senior operators, shift-standing reactor operators, and staff reactor operators. There were no failures on the simulator scenario portion of the test. There were no individual failures on the job performance measure portion of the test. However, 16 individuals failed a single job performance measure on the plant walk-through portion of the exam. None of the individuals failed the job performance measure portion overall. All individuals were remediated on the job performance measures following the examination.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Quarterly Inspection

a. Inspection Scope

The inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, to assess the evaluator's critique, to correctly classify the event in emergency response, and to correctly identify protective action recommendations. The training scenario observed on December 17, 2007, involved operators' reaction to the following: 1) a loss of a 480 Volt electrical bus, and 2) a steam line break leading to an excessive steam demand event, and a small break loss of coolant event that led to a Safety Injection actuation.

Documents reviewed by the inspectors included:

- Emergency Operating Procedure EOP-00, "Standard Post Trip Actions," Revision 21
- Emergency Operating Procedure EOP-05, "Uncontrolled Heat Extraction," Revision 23
- Emergency Plan Implementing Procedure EPIP-OSC-1, "Emergency Classification," Revision 44
- Emergency Plan Implementing Procedure EPIP-EOF-7, "Protective Action Guidelines," Revision 18.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two maintenance activities listed below to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the maintenance rule, 10 CFR Part 50 Appendix B, and the TSs.

- December 19, 2007, reviewed maintenance rule determination for FW-4B main feedwater pump failure and the associated a(1)/a(2) status for feedwater system

- December 27, 2007, review of maintenance rule determination on CW-1A main circulating water pump and justification for continued monitoring in a(2)

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

.2 Triennial Inspection

a. Inspection Scope

Periodic Evaluation Reviews

The inspectors reviewed the licensee's overall implementation of the Maintenance Rule, 10 CFR 50.65, and "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The inspectors reviewed scope and depth of the licensee's Maintenance Rule periodic assessments for Operating Cycles 22 and 23. The inspectors then assessed the effectiveness of corrective actions and program adjustments as a result of the assessment findings.

The inspectors also selected samples of SSCs within the scope of the licensee's Maintenance Rule program that had degraded performance during the review period to assess the response under the Maintenance Rule Program. Inspection Procedure 71111.12 required that the inspectors review four to six SSC samples. The inspectors selected the following six samples for a detailed review:

- Emergency diesel generators and support systems
- Raw water system
- Containment spray system
- Containment recirculation
- Safety electrical distribution system
- Safety-related Structures

For these SSCs, the inspectors reviewed the use of performance history and operating experience, both internal and industry wide, in adjusting preventive maintenance, (a)(1) goals, and (a)(2) performance criteria. For structures being monitored through condition monitoring, the inspectors reviewed the licensee's performance criteria and condition monitoring procedures to determine whether there was consistency and monitoring of proper attributes, which would be predictive of degradation. The inspectors also reviewed adjustments to the scope of the Maintenance Rule program and changes made during the assessment period. Finally, the inspectors reviewed the role of the Maintenance Rule Expert Panel in implementing the program.

The inspectors completed six samples.

b. Findings

Introduction. A Green NCV of 10 CFR 50.65(a)(1) was identified for failure to implement corrective action to correct the condition causing unreliability of the raw water pumps and strainers. Specifically, the cause evaluation concluded that debris from the river (sand and pebbles) was getting into the intake and blocking the pump suction or overwhelming the strainer when an idle pump was started. A recommendation to periodically inspect and clean the area around raw water pumps was not carried forward in the (a)(1) improvement plan, and the other corrective actions did not correct this cause. Failure to implement this recommendation may have contributed to a repeat functional failure on April 29, 2007. This finding has a crosscutting aspect in Problem Identification and Resolution because the corrective actions did not fully address the identified causes (P.1.c).

Description. The raw water system provides cooling to safety related heat loads by supplying river water to component cooling water heat exchangers. The amount of debris in the river water varies seasonally. The plant had a history of ingesting small debris, such as sand and pebbles, into the intake structure. Some of this debris can settle in low-flow areas around idle raw water pumps. When the pumps are later started, this can result in debris being ingested into the pump, plugging the downstream strainer (more common), or blocking the pump to the point where the motor's supply breaker trips (less common). The licensee did not perform inspections or cleaning in the intake bays on a scheduled basis, but did initiate reactive cleaning when performance problems became apparent.

The licensee's Maintenance Rule Program set performance criteria to require corrective action if more than three functional failures of either raw water strainer occur within 36 months. The inspectors reviewed the performance history and noted that Train A experienced three functional failures between June 2002, and February 2005, while Train B experienced six functional failures between November 2004, and December 2006. The licensee placed Train B into Category (a)(1) in March 2007, performed a cause evaluation of suitable depth, and implemented corrective action and goal setting.

Two recommended actions to manage which pumps were idle during periods of increased susceptibility to debris were implemented as required actions in the (a)(1) plan. One action to install spargers (water jet nozzles) near Pumps A and D, and have operators manually sparge for 10 minutes, once per shift, and before starting pumps was also implemented. The inspectors noted that these actions attempted to manage the risk of a functional failure without improving the actual reliability of the SSC's. They also had the potential to avoid functional failures that could occur under design basis accident conditions (when sparging would not occur prior to pump starts), thus allowing the system to return to (a)(2) status without an actual improvement in system reliability. However, the recommendation that did address preventive maintenance and monitoring of the intake condition by periodically inspecting and removing any debris accumulation in the bays of the intake structure was not implemented or made a required action in the (a)(1) plan.

The inspectors determined that the corrective actions did not correct the cause of the functional failures, nor did they implement maintenance activities, which would improve the reliability of the system. Specifically, the cause assessment concluded that periodic cleaning and inspection should be implemented. This was not done, nor was this included as an action required for the (a)(1) action plan. In response to the repetitive functional failure, Condition Report 2007-1492 developed a number of possible design modifications, which were still being considered during this inspection. This was contrary to the guidance in NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 3, which states that while waiting to implement modifications, increased preventive maintenance may be necessary to ensure the affected function will remain reliable.

The inspectors also noted that the licensee implemented a procedure change to conduct a 10-minute sparging activity once per shift, and prior to starting an idle pump, but this was not verified to effectively push away debris, nor would it remove it from the intake permanently; a repeat functional failure occurred on April 29, 2007, after the above corrective actions were completed and the system was in monitoring. This confirmed that the corrective actions were ineffective.

Analysis. Failure to implement timely preventive maintenance to monitor for and remove debris buildup near safety related raw water pumps in response to this system's unreliable performance and classification as Maintenance Rule (a)(1) was a performance deficiency. This finding is more than minor because the raw water system is already experiencing degraded performance. This finding is not suitable for evaluation using the Significance Determination process, so it was determined to have very low safety significance (Green) by management judgment using the guidance provided in Inspection Procedure 71111.12 for Maintenance Rule findings. This finding was determined to have a crosscutting aspect in Problem Identification and Resolution because the corrective actions did not fully address the identified causes (P.1.c).

Enforcement. Title 10 CFR 50.65(a)(1) requires that, when performance of an SSC does not meet established performance goals, appropriate corrective action shall be taken. The NRC Enforcement Manual, Section 7.11.1.a.1(c), specifies that corrective actions should sufficiently address actions to achieve goals, be commensurate with the goals being monitored, be timely and reasonable, and address the credible causes. The inspectors identified that the corrective actions to correct unsatisfactory performance of the raw water system function "RWSTRN" were inadequate because they did not address the primary cause of the functional failures. Specifically, the cause assessment concluded that debris buildup on the raw water pump ledges appeared to be causing strainer clogging, and went on to recommend implementing periodic cleaning and inspection. This was not implemented nor included as an action required for the (a)(1) action plan. Based on a repeat functional failure documented in CR 2007-1942 on April 29, 2007, corrective actions taken were not effective. This was a violation of 10 CFR 50.65(a)(1). Because this violation was of very low safety significance and was entered into the licensee's corrective action program under CR 2007-5004 this violation will be treated as a NCV in accordance with the NRC Enforcement policy: NCV 05000285/2007005-03, "Failure to Take Appropriate Corrective Actions When Raw Water Performance Goals Were Not Met."

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors evaluated the use of the corrective action program within the Maintenance Rule program. The review was accomplished by the examination of a sample of corrective action documents and work orders. The purpose of the review was to determine that the identification of problems and implementation of corrective actions were acceptable.

b. Findings

No findings of significance were identified.

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

.1 Routine Risk Assessment and Management of Risk

a. Inspection Scope

The inspectors reviewed the assessment activity listed below to verify: (1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognized, and/or entered as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) the licensee identified and corrected problems related to maintenance risk assessments.

- December 5, 2007, evaluated the risk management actions for taking emergency diesel generator EDG-2 out-of-service for monthly surveillance testing

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Emergent Work Control

a. Inspection Scope

The inspectors: (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions,

aligning equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the USAR to determine if the licensee identified and corrected risk assessment and emergent work control problems.

- November 12 - 23, 2007, evaluated the risk management activities associated with taking air compressor CA-1B out-of-service, resulting in a yellow risk condition and an orange risk activity.
- November 19, 2007, evaluated the risk management activities associated with taking containment spray pump SI-3A out of service while CA-1B and the "B" intake structure cell were also out of service, resulting in a yellow risk condition.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the USAR and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any Technical Specifications; (5) used the Significance Determination Process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- Operability of FW-6 and FW-10, Motor-Driven and Turbine-Driven Auxiliary Feedwater Pumps during a postulated steam leak in Room 19 (CR 2007-3419)
- Operability of the reactor thermal limits while the plant computer was out of service for planned upgrades
- Operability of FO-1, underground Diesel Fuel Oil Storage Tank, when foreign material was dropped into it during a sampling evolution
- Operability of HCV-497, Component Cooling Heat Exchangers AC-1A-D CCW Bypass Line Isolation Valve, "If HCV-497, CCW/RW Heat Exchanger Bypass

Valve, is fully open and a SIAS occurs, will there still be sufficient cooled CCW flow to support design basis heat removal?" (CR 2007-2864)

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

Introduction: The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the failure to translate calculation results into procedures to maintain the component cooling water system operational. Specifically, the position of Valve HCV-497, component cooling water (CCW) heat exchangers bypass line isolation valve, was not being controlled. The failure to control HCV-497 position had the potential of not meeting design basis requirements to mitigate an accident during warm river water temperatures.

Description: The purpose of Valve HCV-497 was to allow operators to control component cooling water temperature by allowing a portion of the component cooling water to bypass the CCW heat exchangers during periods of the year when the river temperature was cold. The valve is a six-inch, air operated butterfly valve that does not receive a safety signal to close during an accident. That signal, if present, would ensure maximum cooling of the CCW system during a postulated event.

On July 11, 2007, during stroke testing of Valve HCV-497, the licensee discovered that the valve stroked beyond the closed position which allowed bypass flow around the CCW heat exchangers. The inspectors questioned the licensee about this condition and determined there was insufficient documentation within procedures to lead operators to manually position the valve closed and to verify that the valve was closed at a specified river temperature. The inspectors further determined the valve was throttled during the winter months to maintain the CCW heat exchangers outlet temperature within the desired operating range. For the remaining months, the valve was closed or throttled depending on the CCW configuration. Therefore, if current guidance was inadvertently neglected, this valve could remain open during the summer months, possibly causing the CCW temperature to rise above the maximum design temperature of 160°F during a design basis accident. This lack of guidance was documented in Condition Report 2007-2864.

During their investigation, the licensee discovered that in 1997, calculation EAR 97-066, "Determine HCV-497-O, HIC-497, and E/P-497 Safety Functions," recommended that instructions be added to procedures to maintain Valve HCV-497 shut when the river temperature was above 70°F. These instructions were never added to procedures. While investigating the condition, the licensee failed Valve HCV-497 in the shut position and required all the CCW heat exchangers to remain in service. Additional calculations were performed and the licensee concluded that when river temperatures were above 80°F, Valve HCV-497 was required to remain shut with leakage past the valve kept below 31 gallons per minute, or else all the CCW heat exchangers were to remain in service.

Analysis: The failure to translate calculation results into procedures constituted a performance deficiency and finding. This finding was greater than minor because it was associated with the configuration control attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Appendix A, and determined that it was of very low safety significance (Green) because it did not result in an actual loss of safety function and did not screen as potentially risk significant due to external events.

Enforcement: Title 10 of CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that applicable design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, in 1997, the licensee failed to translate the design requirements from Calculation EAR 97-066, "Determine HCV-497-O, HIC-497, and E/P-497 Safety Functions," into station procedures or instructions to maintain Valve HCV-497 shut when river temperature is above 70°F. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as Condition Report 2007-2864, this violation will be treated as a NCV in accordance with the NRC Enforcement policy: NCV 05000285/2007005-04, "Inadequate Design Control of Component Cooling Water Bypass Valve."

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed key affected parameters associated with energy needs, materials/replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flowpaths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the modification listed below. The inspectors verified that: (1) modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; (2) post-modification testing maintained the plant in a safe configuration during testing by verifying that unintended system interactions will not occur, SSC performance characteristics still meet the design basis, the appropriateness of modification design assumptions, and the modification test acceptance criteria has been met; and (3) the licensee has identified and implemented appropriate corrective actions associated with permanent plant modifications.

- Engineering Change-37359, to replace the both Diesel Generator-1 fuel oil pump molded case circuit breakers

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction. A Green self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" occurred when the licensee failed to use the correct breaker trip set points in design calculations. This error, when translated into plant equipment, affected both Emergency Diesel Generator 1 fuel oil transfer pumps and rendered one of them inoperable.

Description. On October 26, 2007, the licensee performed the routine monthly surveillance test per Procedure OP-ST-DG-0001, "Diesel Generator 1 Check," Revision 55. During the test, one of the diesel fuel oil transfer pumps (FO-4B-1-M) repeatedly tripped its associated circuit breaker. The function of the diesel fuel oil transfer pumps is to transfer oil from the underground storage tank to the day tanks and to allow the engine to run for an extended period of time. They will start approximately 90-minutes following an event, and run intermittently during the casualty. During testing to determine the extent of condition, the opposite train breaker and pump (FO-4A-1-M) operated successfully when repeatedly tested (eight successful starts out of eight attempts).

Both breakers that power the Diesel Generator 1 fuel oil transfer pumps had been replaced on September 25, 2007. This replacement of the molded case circuit breakers was performed to address reliability, specifically operating experience that indicated the potential for degradation over time. However, because an identical replacement breaker was no longer available from the vendor due to obsolescence, a similar breaker was installed via an Engineering Change, EC-37359. Investigation by the licensee revealed that the repeated breaker tripping was due to an error in the engineering change. The engineering change had used an incorrect motor National Electrical Manufacturers Association (NEMA) KVA Code designation to set the locked rotor current range. The incorrect NEMA KVA code had been obtained from a vendor web site in 2002, and then subsequently the engineering change preparer in 2007 did not validate the information with other information sources (e.g., nameplate data for the breaker). The replacement breaker instantaneous trip setting for both breakers should have been adjusted to trip the breaker in the current range of 14.4 - 21.6 amps. The actual instantaneous trip settings for both of these breakers was specified and installed in the range of 6.4 - 9.6 amps, resulting in the breaker tripping prematurely when the electrical in-rush current spiked during a pump start.

Though this error affected both fuel oil transfer pump breakers, motor FO-4A-1-M did not spuriously trip and continued to be available as demonstrated through repeated tests. The licensee's root cause analysis concluded this was because the settings of the breaker FO-4B-1-M had drifted since installation in September 2007, whereas FO-4A-1-M had not. Because one of two fuel oil transfer pumps continued to be operable, Diesel Generator 1 remained operable per Technical Specification 2.7. Diesel Generator 2 was not affected by this condition because the fuel oil transfer pump breakers had not been replaced yet when this issue was discovered. The licensee performed design document reviews in order to determine extent of condition of the problem and found no additional errors that would render equipment inoperable/non-functional.

In addition, this finding had a human performance crosscutting aspect associated with work practices because the failure to use human error prevention techniques, such as self-checking led to this condition (H.4(a)).

Analysis. The failure to correctly translate the correct set points into design calculations is a performance deficiency. The finding is more than minor because it is associated with the design control attribute of the mitigating systems cornerstone objectives and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Appendix A, and determined that it was of very low safety significance (Green) because it did not result in an actual loss of safety function and did not screen as potentially risk significant due to external events. This finding has a crosscutting aspect in the area of human performance because the licensee failed in their use of human error prevention techniques, such as self and peer checking. This caused the licensee to incorporate incorrect design basis information (i.e, breaker set points) into plant equipment.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, states, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis, for structures, systems, and components, are correctly translated into specifications, drawings, procedures, and instructions. Contrary to this, on December 12, 2002, Fort Calhoun Station personnel failed to correctly translate the correct locked rotor code into an engineering analysis. This failure to comply with 10 CFR Part 50, Appendix B, Criterion III, is of very low safety significance and has been entered into the licensee's corrective action program as CR 2007-4401. This violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. NCV 05000285/2007005-05, "Failure to Translate Correct Setpoints Into Design Calculations."

1R19 Post-maintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the five post-maintenance test activities of risk significant systems or components, which are listed below . For each item, the inspectors: (1) reviewed the applicable licensing-basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the USAR to determine if the licensee identified and corrected problems related to post-maintenance testing.

- September 29, 2007, Post-maintenance testing on Diesel Generator 1 following troubleshooting of a failed relay board

- November 23, 2007, Post-maintenance testing following the overall of Air Compressor CA-1B
- December 9, 2007, Post-maintenance testing following work performed on Component Cooling Water Heat Exchanger Inlet Valves HCV-489A/B
- December 11, 2007, Post-maintenance testing following preventative maintenance on Low Pressure Safety Injection Pump SI-1B
- December 20, 2007, Post-maintenance testing following the replacement of the MOC Offset Rod on the breaker for the Motor-Driven Auxiliary Feedwater Pump FW-6

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the USAR, procedure requirements, and TSs to ensure that the five surveillance activities listed below demonstrated that the SSC's tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSC's not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- October 3, 2007, Reactor Coolant System (RCS) Leak Rate Test manual calculation while the plant computer was out of service for maintenance
- November 9, 2007, Chemical and Volume Control System Pump/Check Valve In-Service Test
- December 3, 2007, Quarterly functional test of Reactor Protection System Trip Logic

- December 4, 2007, Quarterly functional test of Steam Generator Low Pressure Signal Actuation
- December 10, 2007, In-office review of performance of OP-ST-AE-0001, "Personnel Access Lock O-Ring Seal Test," Revision 18, completed on November 23, 2007, (Note that this satisfies the requirement to review containment penetrations.)

Documents reviewed by the inspectors included:

- OP-ST-RC-3001, "Reactor Coolant System (RCS) Leak Rate Test," Revision 31
- OP-ST-CH-3003, "Chemical and Volume Control System Pump/Check Valve In service Test," Revision 43
- IC-ST-RPS-0042, "Quarterly Functional Test of RPS Trip Logic," Revision 2
- IC-ST-MS-0001, "Quarterly Functional Test of Steam Generator Low Pressure Signal Actuation," Revision 5
- Work Order Package Number 273340; and Work Order Number 279247-01.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the USAR, plant drawings, procedure requirements, and Technical Specifications to ensure that the temporary modification listed below was properly implemented. The inspectors: (1) verified that the modifications did not have an affect on system operability/availability; (2) verified that the installation was consistent with modification documents; (3) ensured that the post-installation test results were satisfactory and that the impact of the temporary modifications on permanently installed SSCs were supported by the test; (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that licensee identified and implemented any needed corrective actions associated with temporary modifications.

- September 10, 2007, Review of emergent temporary modification to repair a steam leak on Steam Generator-2A Feedwater Regulating Bypass Valve FCV-1105.

Document reviewed by the inspectors was Engineering Change EC 41359.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2007 biennial emergency plan exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario simulated loss of an offsite power line, a fire disabling onsite diesel generators, a turbine trip leading to station blackout conditions, a large break loss of coolant accident in containment, the uncovering of the reactor core causing core damage, a hydrogen burn inside containment, and a radiological release to the environment via a damaged containment purge valve and line and the auxiliary building stack, to demonstrate the licensee's capabilities to implement the emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations, in the simulator control room and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed recognition of and response to abnormal and emergency plant conditions, the transfer of decision-making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, and emergency plan implementing procedures associated with operation of the above facilities and performance of the associated emergency functions, as listed in the Attachment to this report.

The inspectors compared the observed exercise performance with the requirements in the facility emergency plan; 10 CFR 50.47(b); 10 CFR Part 50, Appendix E; and with the guidance in the emergency plan implementing procedures and other federal guidance.

The inspectors attended the post-exercise critiques in each of the above facilities to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management.

The inspectors completed one sample during the inspection.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors performed an onsite review of Revisions 27 and 28 to the Fort Calhoun Station Radiological Emergency Response Plan, and Section B, "Organizational Control of Emergencies." These revisions moved control of one environmental monitoring team from the technical support center to the emergency operations facility, and eliminated the position of technical support center emergency response coordinator, reassigning those duties to the technical support center director.

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q). These reviews were not documented in a safety evaluation report and did not constitute approval of licensee changes; therefore, these revisions are subject to future inspection.

The inspectors completed two samples during the inspection.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. 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 supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of three radiation, high radiation, or airborne radioactivity areas
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation work permit briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

Either because the conditions did not exist or an event had not occurred, no opportunities were available to review the following items:

- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem committed effective dose equivalent
- Dosimetry placement in high radiation work areas with significant dose rate gradients

The inspectors completed 17 of the required 21 samples.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed:

- Current 3-year rolling average collective exposure
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Assumptions and basis for the current annual collective exposure estimate, the methodology for estimating work activity exposures, the intended dose outcome, and the accuracy of dose rate and man-hour estimates
- Workers' use of the low dose waiting areas
- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspectors completed 9 of the required 29 samples.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors sampled submittals for the performance indicators listed below for the period October 1, 2006, through September 30, 2007. The definitions and guidance of Nuclear Engineering Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period.

- MS05, Safety System Functional Failures
- MS06, Mitigating System Performance Index, Emergency AC Power Systems
- MS08, Mitigating System Performance Index, Heat Removal Systems
- MS10, Mitigating System Performance Index, Cooling Water Systems

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

.2 Cornerstone: Emergency Preparedness

a. Inspection Scope

The inspectors reviewed licensee evaluations for the three emergency preparedness cornerstone performance indicators of Drill and Exercise Performance, Emergency Response Organization Participation, and Alert and Notification System Reliability, for the period March 2006 through June 2007. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Revisions 3 and 4, and the licensee performance indicator procedures Emergency Planning Department Manual, EPDM-14, "Emergency Preparedness Performance Indicator Program," Revision 7, Form EP-47, and "NRC Performance Indicator Verification Checklist," Revision 4, were used to verify the accuracy of the licensee's evaluations for each performance indicator reported during the assessment period.

The inspectors reviewed one hundred percent of drill and exercise scenarios and licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspectors reviewed selected emergency responder qualification, training, and drill participation records, and reviewed alert and notification system testing procedures, maintenance records, and a one hundred percent sample of siren test records. The inspectors also reviewed other documents as listed in the attachment to this report.

The inspectors completed three samples during the inspection.

b. Findings

No findings of significance were identified.

.3 Cornerstone: Occupational Radiation Safety

a. Inspection Scope

Occupational Exposure Control Effectiveness

The inspectors reviewed licensee documents from April 1 through September 30, 2007. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's technical specifications), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 5). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspectors toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

The inspectors completed the required sample (one) in this cornerstone.

Cornerstone: Public Radiation Safety

Radiological Effluent Technical Specification/Offsite Dose Calculation Manual
Radiological Effluent Occurrences

The inspectors reviewed licensee documents from April 1, 2007, through September 30, 2007. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

The inspectors completed the required sample (one) in this cornerstone.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Annual Sample Review

a. Inspection Scope

The inspectors reviewed licensee drill and exercise evaluation reports for the period January 2006 through September 2007 to identify emergency response organization performance deficiencies, and observed licensee performance during the plume phase biennial emergency plan exercise to determine the effectiveness of corrective actions.

The inspectors also reviewed Condition Reports 2007-4304, 2007-4270, and 2007-4385 to ensure the full extent of the issues were identified.

b. Findings and Observations

No findings of significance were identified.

.2 Routine Review of Identification and Resolution of Problems

The inspectors evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 2OS1)
- ALARA Planning and Controls (Section 2OS2)

Although no findings of significance were identified, the inspectors performed a review of the licensee's corrective action program and associated documents to identify trends associated with control of access to radiologically significant areas. The inspectors evaluated the corrective actions associated with five examples of failure to obtain the proper authorization and briefing to enter high radiation areas. Initially, the corrective actions were directed to the specific circumstances and persons involved in each event. Condition Report 2007-2151, dated May 15, 2007, was written by the licensee to address the apparent trend in these events. The corrective actions outlined in this condition report shows the licensee has taken a more global approach to the issues and addresses improvements to the programs and processes associated with entry into those areas.

.3 Semiannual Trend Review

a. Inspection Scope

The inspectors performed a semiannual assessment of the licensee's corrective action program. The assessment covered trends of CRs written since the beginning of 2005 involving raw water pump performance. The focus of the inspection was determining whether the licensee had a correct understanding of the performance trends on each of the raw water pumps. The inspectors reviewed the surveillance test data against the licensee's test acceptance criteria while using the relevant ASME Code guidance.

The inspectors completed one sample in this inspection.

b. Findings and Observations

During the inspection, one licensee-identified violation was discovered. A description of this issue can be found in Section 4OA7 of this report. No other findings of significance were identified.

40A3 Event Follow-up

- .1 (Closed) LER 05000285/2006005-00, Faulty Maintenance Renders One Train of Containment Spray Inoperable

The details of this condition were addressed in NRC Inspection Report 05000285/2006-018 and documented as a White Violation. No additional issues were identified by the inspectors through review of the LER. This LER is closed.

- .2 (Closed) LER 05000285/2006007-00, Inadequate Seismic Design of Reactor Vessel Head Refueling Stand

The details of this condition are discussed in Section 40A7 of this report. This LER was issued by the licensee then subsequently retracted when detailed engineering analysis revealed that the Reactor Vessel Head could not have conceivably caused a loss of safety function during a seismic event.

- .3 (Closed) LER 05000285/2007003-00, Inoperability of a Diesel Generator with Inoperable Containment Spray Pump from the Opposite Bus

The details of this condition were addressed in NRC Inspection Report 05000285/2007-011 and documented as a White Violation. No additional issues were identified by the inspectors through review of the LER. This LER is closed.

- .4 (Closed) LER 05000285/2007005-00, Inadequate Operability Determination Results in Technical Specification Violation

The details of this condition are discussed in Section 40A7 of this report. This LER is closed.

40A5 Other Activities

- .1 Review of Corrective Actions Associated with VIO 2007009-01

- a. Inspection Scope

The inspectors reviewed corrective actions taken by the licensee in response to a notice of violation (NOV) received when a security officer deliberately failed to sign onto a radiation work permit and activate an electronic alarming dosimeter (EAD) prior to assuming his post on the roof of the radioactive waste building. Condition Report 2006-1359 was initiated on April 30, 2007, to address this event. The inspectors determined that the corrective actions implemented by the licensee were not consistently understood by all departments involved and that the corrective actions were not adequately implemented. The licensee's reply to the NOV states, in part, that the security post turnover checklist has been changed to include verifying the security officer has an EAD in possession and that the EAD is functioning. This corrective action was not included in the corrective actions listed in Condition Report 2006-1359. The Security Manager understood that the security officers would only verify the EAD for other security officers. However, the Radiation Protection Manager understood that the security officers would verify the EAD for any persons requiring access to the radioactive waste building roof. From discussions with some security officers, the inspectors determined

that the current practice by the security officers was to verify that any person requiring access would have an activated EAD in their possession prior to allowing access. With concurrence of the licensee's management, the inspectors and a radiation protection supervisor, on two different occasions with two different security officers, attempted to gain access to the roof area with an EAD that was not activated. However, both times, the licensee supervisor was granted access by the security officers. Additionally, from discussions with the security officers and a review of the training material, the inspectors determined that training provided to the officers did not provide sufficient detail to allow the officers to determine if an EAD had been properly activated. The inspectors determined that closure of the NOV would be postponed until the licensee could reevaluate the proposed corrective actions.

.2 Institute of Nuclear Power Operations (INPO)/World Association of Nuclear Operators (WANO) Plant Assessment Report Review

The inspectors reviewed the final report for INPO/WANO assessment of Fort Calhoun Station conducted in March and April of 2007. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspective of licensee performance. No issues were identified that required further NRC follow-up.

40A6 Meetings

Exit Meeting Summary

On October 19, 2007, the inspectors presented the emergency preparedness exercise preliminary inspection results to Mr. D. Bannister, Site Director, and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

On November 29, 2007, the lead inspectors conducted a telephonic exit meeting to present the final emergency preparedness exercised inspection results to Mr. C. Simmons, Supervisor, Emergency Preparedness, and G. Cavanaugh, Supervisor, Regulatory Compliance. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

On December 6, 2007, the inspectors presented the triennial maintenance effectiveness inspection results to Mr. D. Bannister and other members of his staff, who acknowledged the findings. The inspectors confirmed that proprietary information was returned during the inspection.

On December 14, 2007, the inspectors presented the occupational radiation safety inspection results to Mr. D. Bannister and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

On December 20, 2007, the inspectors discussed the inspection results of the licensed operator annual requalification examination with Mr. J. Kuzela, Training Instructor. The licensee acknowledged the results presented. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

On January 17, 2008, the resident inspectors presented the inspection results to Mr. D. Bannister, Site Director, and other members of his staff who acknowledged the findings. The inspectors confirmed that no proprietary information had been provided.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements, which meet the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as NCVs.

- Title 10 CFR Part 50, Appendix B, Criterion III, states, in part, that “measures shall be established to assure that applicable regulatory requirements and the design basis, for structures, systems, and components, . . . are correctly translated into specifications, drawings, procedures, and instructions.” Contrary to the above, on October 31, 2006, the licensee identified that the stands which hold the Reactor Vessel Head during a refueling outage were not seismically qualified. This condition could result in accidents as described in USAR Sections 14.18 “Fuel Handling Accident in Spent Fuel Pool and Containment,” and 14.24, “Heavy Loads.” This finding only had very low safety significance because, following detailed analysis the condition did not affect other mitigation systems or result in a total loss of safety function. This finding was identified in the licensee’s corrective action program as Condition Report 200605083 and was reported as LER 05000285/2006007-00. Refer to Section 4OA3 of this report regarding the LER and the subsequent retraction.
- Technical Specification 3.0.5, states, that “If it is discovered that a Surveillance was not performed within its specified surveillance interval, then compliance with the requirement to declare the OPERABILITY requirements for the Limiting Condition for Operation not met may be delayed, from the time of discovery, up to 24-hours or up to the limit of the specified surveillance interval, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24-hours and the risk impact shall be managed.” Contrary to the above, on September 12, 2007, the licensee identified that the testing frequency for raw water pump AC-10D should have been increased in response to the results of testing on July 11, 2007, and a risk evaluation had not been performed. This finding only had very low safety significance because the pump’s performance fell in the low-alert action range of the curves, and not in the required action range. Consequently, the pump remained operable/functional during the time period in question. This finding was identified in the licensee’s corrective action program as Condition Report 2007-3734 and was reported as LER 05000285/2007005-00. Refer to Section 4OA3 of this report regarding the review of the LER.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Bannister, Site Director
G. Cavanaugh, Supervisor, Regulatory Compliance
P. Christensen, Senior Technician, Radiation Protection
L. Church, System Engineer
A. Clark, Manager, Security
O. Clayton, Manager, Nuclear Procurement Services
R. Clemens, Division Manager, Nuclear Engineering
M. Core, Manager, Nuclear Projects
S. Coufal, Health Physicist, Radiation Protection
H. Faulhaber, Division Manager, Nuclear Asset Management
M. Ferm, Manager, Shift Operations
J. Fluehr, PRA Engineer
M. Frans, Manager, System Engineering
S. Gebers, Manager, Emergency Planning and Health Physics
D. Guinn, Regulatory Compliance Engineer
R. Haug, Manager, Radiation Protection
T. Jamieson, Radiological Equipment Supervisor, Radiation Protection
J. Johnson, System Engineer
T. Maine, ALARA Supervisor, Radiation Protection
E. Matzke, Compliance Engineer
J. McManis, Manager, Nuclear Licensing
R. Ronning, System Engineer
T. Seckelberg, Senior Technician, Radiation Protection
L. Schneider, Quality Specialist
C. Simmons, Supervisor, Emergency Preparedness
R. Tella, EROP Coordinator
D. Trausch, Assistant Manager, Fort Calhoun Station
R. Westcott, Manager, Quality
C. Williams, Supervisor, Radiation Protection Operations
J. Zagata, Maintenance Rule Coordinator

NRC Personnel

S. Alexander, Maintenance Rule Expert, NRR
R. Bywater, Senior Reactor Analyst, RIV

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000285/2007005-02	URI	Potential Inadequate Internal Flooding Procedure (Section 1R06)
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Opened and Closed

05000285/2007005-01	NCV	Inadequate Cold Weather Procedure (Section 1R01)
05000285/2007005-03	NCV	Failure to Take Appropriate Corrective Actions When Raw Water Performance Goals Were Not Met (Section 1R12.2)
05000285/2007005-04	NCV	Inadequate Design Control of Component Cooling Water Bypass Valve (Section 1R15)
05000285/2007005-05	NCV	Failure to Translate Correct Setpoints Into Design Calculations (Section 1R17)

Closed

05000285/2006005-00	LER	Faulty Maintenance Renders One Train of Containment Spray Inoperable (Section 4OA3)
05000285/2007003-00	LER	Inoperability of a Diesel Generator with Inoperable Containment Spray Pump from the Opposite Bus (Section 4OA3)
05000285/2007005-00	LER	Inadequate Operability Determination Results in Technical Specification Violation (Section 4OA3)

Discussed

05000285/2007009-01	VIO	Failure to Follow Radiation Work Permit Instructions (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Plant Computer Plot of Temperature vs. Time from November 15 until November 30, 2007

Control Room Operating Logs from November 19 until November 29, 2007

Licensee Procedure OI-EW-1, "Extreme Weather," Revision 13, Attachment 1, "Cold Weather Preparations," dated November 30, 2007

Condition Reports:

200500118

200500188

200600565

2007-4931

Section 1R04: Equipment Alignment

Procedure OP-ST-DG-0001, "Diesel Generator-1 Check," Revision 57

Drawing D-4665, "DG-1 Diesel Generator One Line Diagram," Revision 5

Procedure OP-ST-AFW-0001, "Auxiliary Feedwater System Alignment Check," Revision 15

Procedure OI-AFW-1, "Auxiliary Feedwater Actuation System Normal Operation," Revision 66

Section 1R05: Fire Protection

Standing Order SO-G-28, "Station Fire Plan," Revision 69

Standing Order SO-G-91, "Control and Transportation of Combustible Materials," Revision 23

Standing Order G-102, "Fire Protection Program Plan," Revision 7

Abnormal Operating Procedure AOP-06-02, "Fire Emergency, Uncontrolled Area of Auxiliary Room," Revision 0

EA-FC-89-005, "Safe Shutdown Analysis," Revision 12

EA-FC-97-001, "Fire Hazards Analysis (FHA) Manual," Revision 12

Section 1R06: Flood Protection Measures

USAR Sections 1.3, 6.2, 8.1, and Appendix G

NRC Letter addressed to Omaha Public Power District, "Revision of Safety Evaluation Report Basis," dated March 3, 1994

NRC Letter addressed to Omaha Public Power District, with attached Safety Evaluation dated February 16, 1978

Fort Calhoun Station Probabilistic Risk Assessment Summary Notebook, Revision 10

Calculation FC06759, "Spent Regenerate Tank and Pump Room Door (971-1A) Failure Mechanism"

Abnormal Operating Procedure AOP-06-01, "Auxiliary Building Radiation Controlled Areas and Containment," Revision 0

Abnormal Operating Procedure AOP-10, "Loss of Circulating Water," Revision 2

Abnormal Operating Procedure AOP-11, "Loss of Component Cooling Water," Revision 13

Abnormal Operating Procedure AOP-18, "Loss of Raw Water," Revision 6

Annunciator Response Procedure ARP-AI-100/A50, "Annunciator Response Procedure A50 Local Annunciator A50 Waste Disposal," Revision 9

Preventative Maintenance Procedure PE-PM-VX-0424, "Crane Bolted Cap Swing Check Valve Inspection," Revision 1

Drawing 11405-M-99, Sheets 1-2, "Waste Disposal System Auxiliary Building Floor Drain Flow Diagram," Revisions 20 and 7 respectively

Drawing 11405-M-7, Sheets 1A and 1B, "Waste Disposal System Flow Diagram," Revision 6

Maintenance Work Order 00253100-01, "Check of Potentially Contaminated Floor Drains/Hubs" dated May 25, 2007

Condition Reports:

200302414

200700706

2007-2701

2007-3670

Section 1R12: Maintenance Effectiveness

Maintenance Rule Program Documents

Status Summary of Equipment in Maintenance Rule Category (a)(1), dated 11/27/07
Cycle 22 Maintenance Rule Periodic Assessment of Maintenance Effectiveness, dated 4/10/06
Cycle 23 Maintenance Rule Periodic Assessment of Maintenance Effectiveness, dated 11/20/07
Maintenance Rule (a)(1) Cause Determination for EDG System, Number 09020703
Maintenance Rule (a)(1) Cause Determination for ACS System, Number 01130508, Revision 1
Maintenance Rule Cause Determination Number 07050704

Procedures

OI-RW-1, Raw Water System Normal Operation, Revision 82
PED-SEI-34, Maintenance Rule Program, Revision 6
MRII-0, General Instructions, Revision 6
MRII-1.1, Scoping, Revision 2
MRII-1.2, Risk Significance Determination, Revision 5
MRII-2, Setting Performance Criteria, Revision 4
MRII-2.1, Monitoring and Reporting of SSC Availability, Revision 4
MRII-6, Placement of SSC's into Category (a)(1) or (a)(2), Revision 8
MRII-7.1, Periodic Assessment, Revision 3
SE-PM-AE-1001, Auxiliary Building Structural Inspection, Revision 4
SE-PM-AE-1002, Intake Building and Miscellaneous Structures Inspection, Revision 4
SE-PM-CONT-0001, Containment General Structural Inspection, Revision 13

Condition Reports and Work Orders

2005-3018

2006-1764

2006-2614

2007-0875

200701679

2007-1942

WO 00261772

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

List of Risk Management Actions as documented in Plan-of-the-Day Schedule, dated November 12, 19, and December 5, 2007

Standing Order Procedure SO-M-100, "Conduct of Maintenance," Revision 45

Section 1R15: Operability Evaluations

Technical Specifications Section 2.10.4, "Power Distribution Limits," Amendment 249

Technical Data Book TDB-VI, "Core Operating Limit Report," Revision 33

Safety Analysis for Operability 2007-01, Revisions 0-3

Operability Evaluation Form for Condition Report 2007-2864, dated July 13 and 19, 2007

Calculation EA-FC-92-027, "Component Cooling Water and Raw Water Post-Accident Single Failure Evaluation," Revision 3

Calculation EA-FC-95-012, "Effects of Post-DBA CCW Temperature Transient on Components," Revision 0

Calculation FC-07-259, "FCS RW/CCW GOTHIC Model – Additional Cases," Revision 0

Engineering Assistance Request - EAR 97-066, "Determine HCV-497-O, HIC-497, and E/P-497 Safety Functions," dated August 12, 1997

Dayshift Control Room Logs dated July 11, 2007

Condition Reports:

2007-2864

2007-2872

2007-2921

Section 1R17: Permanent Plant Modifications

Root Cause Analysis Report for Condition Report CR 2007-4401, "Emergency Diesel Generator #1 Fuel Oil Transfer Pump Breaker Tripping (D1-70-8FT2 Breaker)"

Engineering Change EC 37359, "Breaker Replacement in DG Engine Control Panels," Revision 1

Work Order 00285500-01, "Perform Testing on DG-1 Fuel Oil Pump Motor Inrush Current"

Work Order 00285404-02, "Breaker Tripped Twice When Fuel Oil Pump Was Started"

Work Order 00285500-01, "Perform Testing on DG-1 Fuel Oil Pup Motor Inrush Current"

Updated Safety Analysis Report, Section 8.4, "Emergency Power Sources"

Technical Data Book-VIII, Attachment 4, "DG Component Operability Guidance," Revision 31

Reportability Evaluation for Condition Report CR 2007-4401

Control Room Operator Logs dated October 26, 2007

Calculation EA-FC-99-0005, Revision 2

Condition Report 2007-4449

Section 1R19: Post Maintenance Testing

Work Order Packages

00255659-01	00269433-01	00282771-02	00282774-01
00282719-01	00282615-02	00282615-01	00282709-01
00282816-01	00282813-01	00282815-01	00261090-01

Work Request Number 113325

Procedure MM-PM-PX-0051, "Air Compressors CA-1A, CA-1B, and CA-1C Maintenance,"
Revision 2

Procedure OI-AFW-1, "Auxiliary Feedwater Actuation System Normal Operation," Revision 66

Procedure OI-AFW-4, "Auxiliary Feedwater Startup and System Operation," Revision 65

Procedure OP-ST-AFW-0007, "Auxiliary Feedwater Pump FW-6 Operability Test," Revision 3

Drawing 11401-M-252, Sh 1, "Flow Diagram Main Steam P&ID," Revision 98

Drawing 11405-M-253 Sh 4, "Flow Diagram Steam Generator Feedwater and Blowdown P&ID,"
Revision 35

Drawing 11405-M-254 Sh 2, "Flow Diagram Condensate P&ID," Revision 36

Drawing E-4144, "FW-10 Lube Oil Schematic P&ID," Revision 6

Drawing E-4005 Sh 1 "Modifications to Compressed Air Starting System for the Diesel Engines,"
Revision 8

Drawing B120F14501 Sh 1, "Schematic Engine Control," Revision 6

Drawing B120F14501 Sh 2, "Schematic Engine Control," Revision 18

Drawing B120C11509 Sh 1, "Schematic Diagram Field Flashing Control," Revision 9

Root Cause Determination "Emergency Diesel Generator DG-1 Start Circuit Failure (9/27/2007)
Condition Report: 2007-3969"

Design Basis Document SDBD-DG-112, "Emergency Diesel Generators," Revision 20

Condition Report 2007-2272

Condition Report 2007-3969

Condition Report 2007-4053

Section 1EP1: Exercise Evaluation

EPIP-EOF-1, "Emergency Operations Facility Activation," Revision 17

EPIP-EOF-6, "Dose Assessment," Revision 34

EPIP-OSC-9, "Team Briefings," Revision 11

EPIP-OSC-21, "Operations Support Center Facility Activation," Revision 15

EPIP-TSC-1, "Technical Support Center Facility Activation," Revision 27

EPIP-TSC-8, "Core Damage Assessment," Revision 19

EOP-20, "Standard Post-Trip Actions," Revision 21

Drill Evaluation Reports:

January 18, 2005	June 27, 2006	July 19, 2005	August 9, 2005
October 31, 2005	December 5, 2005	March 7, 2006	April 25, 2006
May 23, 2006	June 19, 2006	April 17, 2007	August 21, 2007

Exercise Scenarios:

June 24, 2003	October 26, 2004	October 31, 2005	December 5, 2005
August 21, 2007			

Section 2OS1: Access Controls to Radiologically Significant Areas

Audits and Self-Assessments

Quality Department Surveillance Report 07-QUA-055

Procedures

RPP Radiation Protection Plan, Revision 22

RPI-13, Radiological Posting Standards, Revision 2

RP-202, Radiological Surveys, Revision 31

RP-204, Radiological Area Controls, Revision 47

RP-650, Internal Dosimetry Program, Revision 10

RP-656, Bioassay Calculations, Revision 5

RP-901, Radiation Protection Program Effectiveness Report, Revision 7

SO-G-101, Radiation Worker Practices, Revision 30

SO-O-47 Spent Fuel Pool Inventory Control, Revision 7

Miscellaneous

Annual Spent Fuel Pool Physical Inventory Log dated 10/5/07
Fort Calhoun Nuclear Station Radiation Worker Training, Revision 16

Corrective Action Documents

2007-0914	2007-2151	2007-3238	2007-3709
2007-4215	2007-4268	2007-4607	2007-4997
2007-5093			

Section 2OS2: ALARA Planning and Controls

Audits and Self-Assessments

Quality Department Surveillance Report 07-QUA-040

Procedures

RP-205, DAC-Hour Tracking, Revision 6
RP-301, ALARA Planning/RWP Development and Control, Revision 29
RP-309, Radiation Protection Self-Assessment Program, Revision 8
RP-608, Dose Calculations from Contamination, Revision 12
RP-650, Internal Dosimetry Program, Revision 10
RP-656, Bioassay Calculations, Revision 5

Corrective Action Documents

2007-3563	2007-3564	2007-3681	2007-3703
2007-3706	2007-4135	2007-4268	

Section 4OA1: Performance indicator Verification

MSPIBD, "Mitigating Systems Performance Index Basis Document for Fort Calhoun Station",
Rev. 1

NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 5

Various Operator logs dated October 1, 2006 through September 30, 2007

Condition Reports:

2006-05725	2007-00449	2007-01119	2007-01818	2007-02886
2006-05737	2007-00470	2007-01133	2007-01849	2007-02921
2006-05823	2007-00479	2007-01146	2007-01885	2007-03002
2006-05824	2007-00527	2007-01148	2007-01942	2007-03005
2006-05850	2007-00528	2007-01171	2007-02039	2007-03019
2006-05865	2007-00538	2007-01174	2007-02040	2007-03063
2006-05893	2007-00576	2007-01177	2007-02070	2007-03066
2006-05946	2007-00584	2007-01180	2007-02083	2007-03067
2006-05954	2007-00698	2007-01191	2007-02090	2007-03139
2006-05986	2007-00699	2007-01235	2007-02091	2007-03245
2006-05989	2007-00721	2007-01276	2007-02092	2007-03268
2006-06065	2007-00725	2007-01293	2007-02208	2007-03273
2006-06070	2007-00731	2007-01304	2007-02230	2007-03419
2006-06081	2007-00744	2007-01348	2007-02272	2007-03440
2006-06097	2007-00745	2007-01376	2007-02381	2007-03584
2006-06105	2007-00754	2007-01380	2007-02438	2007-03601
2006-06118	2007-00756	2007-01381	2007-02470	2007-03623
2006-06169	2007-00800	2007-01410	2007-02489	2007-03815
2007-00077	2007-00811	2007-01444	2007-02506	2007-03828
2007-00079	2007-00822	2007-01472	2007-02534	2007-03913
2007-00082	2007-00833	2007-01510	2007-02543	2007-03930
2007-00140	2007-00875	2007-01556	2007-02549	2007-03966
2007-00308	2007-00949	2007-01664	2007-02554	2007-03969
2007-00411	2007-01068	2007-01709	2007-02565	2007-03982
2007-00422	2007-01074	2007-01715	2007-02622	2007-03984
2007-00428	2007-01085	2007-01716	2007-02664	2007-04012
2007-00439	2007-01086	2007-01737	2007-02864	2007-04016
2007-00447	2007-01094	2007-01814	2007-02872	2007-04017

Section 4OA2 Identification and Resolution of Problems

Procedures:

EPIP-OSC-1, "Emergency Classification," Revisions 43 and 44
EPIP-OSC-2, "Command and Control Position Actions/Notifications," Revision 45
EPIP-EOF-7, "Protective Action Guides," Revision 18

Emergency Preparedness Test, EPT-01, "Alert Notification System Silent Test," Revision 14
Emergency Preparedness Test, EPT-02, "Alert Notification System Growl Test," Revision 18
Emergency Preparedness Test, EPT-03, "Alert Notification System Complete Cycle Test,"
Revision 13

Miscellaneous Documents

Fort Calhoun Station Radiological Emergency Response Plan

Section 40A7: Licensee Identified Violations

Technical Specification 2.4, "Containment Cooling"

Surveillance Test OP-ST-RW-3001, "AC-10D Raw Water Pump Quarterly Inservice Test,"
Revision 30 completed on January 25, 2007

Surveillance Test OP-ST-RW-3001, "AC-10D Raw Water Pump Quarterly Inservice Test,"
Revision 30 completed on April 26, 2007

Surveillance Test OP-ST-RW-3001, "AC-10D Raw Water Pump Quarterly Inservice Test,"
Revision 30 completed on July 11, 2007

Surveillance Test OP-ST-RW-3001, "AC-10D Raw Water Pump Quarterly Inservice Test,"
Revision 30 completed on September 19, 2007

Technical Data Book TDB-III.34, "AC-10D Pump Curve," Revision 26

Root Cause Analysis Report "Surveillance Requirements Not Met for Raw Water Pump AC-
10D," Revision 1

Condition Reports:

2007-4196

2007-4957

LIST OF ACRONYMS

ALARA	as low as reasonably achievable
AOP	abnormal operating procedures
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
NCV	noncited violation
NEMA	National Electrical Manufacturers Association
NRC	Nuclear Regulatory Commission
SSC	structure, system and component
TS	Technical Specification
USAR	United Safety Analysis Report