

Fort Calhoun 4Q/2005 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Control Transient Combustible Materials that Exceeded the Fire Load limit for an Area

A noncited violation of Technical Specification 5.8.1.c, Fire Protection Program Implementation, was identified for the failure follow the fire protection program after exceeding the transient combustibles limit in Room 59. The licensee did not evaluate and establish compensatory measures prior to storing transient combustibles in Room 59 as required by Procedure SO-G-91, "Control and Transportation of Combustible Materials," Revision 20.

This finding was more than minor since it was associated with the protection against external factors attribute of the mitigating systems cornerstone. Using the Significance Determination Process, Manual Chapter 0609, Appendix F, the finding was determined to be in the Fire Prevention and Administrative Controls category because it affected the administrative controls used in fire prevention. The degradation rating of the finding was low. This was based on the materials being stored in a room with no heat source and the materials did not contain combustible liquids or were not self heating. The finding was characterized under the significance determination process as having very low safety significance (Green) since the degradation rating was low. Based on previous opportunities for personnel to recognize this condition, a human performance aspect was identified for this finding. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005002\(pdf\)](#)

Mitigating Systems

Significance:  Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to identify improperly sized reactor coolant pump seal O-rings

A noncited violation (NCV) of Criterion XVI, "Corrective Action," was identified for a failure to identify and correct a condition adverse to quality on a reactor coolant pump seal when another pump was disassembled for maintenance. Specifically, the licensee did not recognize that a material nonconformance (inadequately sized O-rings) was applicable to components installed in the plant. Installation of the incorrect O-ring resulted in subsequent failure of the reactor coolant pump seal.

This finding is more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was assessed using Appendix G, "Shut-down Operations Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process." Using Checklist 3, "PWR Cold Shut-down and Refueling Operation - RCS Open and Refueling Cavity Level < 23' Or RCS Closed and No Inventory in Pressurizer, Time to Boiling < 2 hours," in Attachment 1, "Phase 1 Operational Checklists for both PWRs and BWRs," of Appendix G of Manual Chapter 0609, this finding did not require quantitative assessment and, therefore, screened as a Green finding. A contributing cause of the finding is related to the crosscutting element of problem identification and resolution in that engineering did not identify that the reactor coolant pump seal was degraded/nonconforming despite several indications. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Low pressure safety injection water hammer events caused by inadequate procedure

A noncited violation of Criterion V, "Instructions, Procedures and Drawings," was identified for an inadequate procedure that resulted in several water hammer events on the low pressure safety injection system and related damage to safety-related components. The licensee's procedure resulted in allowing reactor coolant to leak back into the low pressure safety injection system. In addition to the crosscutting aspect of human performance related to procedure development, this issue had crosscutting aspects related to problem identification and resolution in that the licensee failed to recognize that the back leakage had established conditions that were conducive to water hammer. The licensee then vented the system using the low pressure safety injection pump, which resulted in three water hammer events.

The licensee's inadequate procedure and poor problem identification, which resulted in three low pressure safety injection water hammer events, constituted a performance deficiency and a finding. This finding is greater than minor because it could be reasonably viewed as a precursor to a significant event (i.e., the loss of low pressure safety injection when called upon to mitigate an accident). Additionally the finding affected the availability and reliability of mitigating system equipment (Flow Instrument FI-328). This finding was evaluated using the significance determination process and was determined to be a finding of very low safety significance because the finding was: (1) not a qualification deficiency confirmed to result in a loss of function, (2) did not result in a loss of safety system function, (3) did not represent an actual loss of safety function of a single train, (4) did not represent an actual loss of safety function of risk significant equipment >24 hours, and (5) did not screen as risk significant due to external events. The inspectors also determined that the cause of the finding was related to a failure to identify a condition adverse to quality. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Nov 10, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Prompt Corrective Action for Fire Protection Program Deficiencies

Three examples of a Green noncited violation of License Condition 3.D of the Fort Calhoun Station Operating License were identified for the failure to take prompt corrective action to correct deficiencies adverse to fire protection, as required in the NRC-approved fire protection program. License Condition 3.D states that the licensee shall implement and maintain in effects all provisions of the approved fire protection program as described in the updated safety analysis report. The fire hazards analysis manual, which is described in the updated safety analysis report, states in Section 3.7.9 that the quality assurance program assures that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material, and non-conformances are promptly identified, reported and corrected. This violation has cross-cutting aspects related to Problem Identification and Resolution since for the three examples, the licensee failed to promptly correct conditions adverse to fire protection by completing corrective actions for NRC identified noncited violations from previous inspections.

Example 1: The licensee failed to take prompt corrective action to resolve an NRC-identified noncited violation for the failure to meet the requirements of Section III.G.2 of Appendix R to 10 CFR Part 50 for ensuring that one redundant train of equipment required to achieve and maintain hot shutdown conditions remains free of fire damage. The NRC issued Noncited Violation 50-285/0001-01, on May 9, 2000. The licensee instituted fire watches in the affected area (Fire Area 32) and entered the finding into the corrective action program as Condition Report 200000207.

The licensee determined that the optimum approach would be a combined approach that utilized the rerouting of cables, manual actions and cold shutdown repairs to achieve compliance. Only instrumentation and control cables would be rerouted. The compliance for 480 volt power cables would be accomplished using manual operator actions and meeting the original exemption conditions. The 4160 volt power cables are required for cold shutdown and compliance would be achieved by repair of the required cables within 72 hours of a fire.

During the Spring 2005 Refueling Outage, the licensee implemented a modification that rerouted twelve instrumentation and control cables out of Fire Area 32 to separate fire areas in the switchgear rooms and lower/upper penetration rooms. However, for the 4160 volt power cables, a procedure for the cold shutdown repairs and identification of the required materials had not been completed by the end of this inspection.

The performance deficiency was a failure to meet the requirements of Section III.G.2 of Appendix R to 10 CFR Part 50 for ensuring that one redundant train of equipment required to achieve and maintain hot shutdown conditions remains free of fire damage. This finding affected the mitigating systems cornerstone and was considered more than minor since it affected the cornerstone attribute of Protection Against External Factors (i.e., fire). This finding had been evaluated using the significance determination process and had been determined to be of very low safety significance (green). The team verified that changes to the conditions in the area would not have increased the safety significance of the finding and that the fire watches that were implemented in January 2000 were still being conducted.

Example 2: The licensee failed to take prompt corrective action to resolve an NRC-identified noncited violation of Technical Specification 5.8.1.c, Fire Protection Program Implementation, for the failure to implement procedures to ensure that fire barriers protecting safety-related areas were functional. NRC Inspection Report 05000285/2004003 documented a Green noncited violation as a result of Fire Barrier 69-F-24 being a nonfunctional fire barrier that separated Fire Area 20.5 (Room 62 - Ion Exchanger Area) and Fire Area 20.7 (Room 69 - Auxiliary Building Ventilation Room, Elevation 1025). The licensee instituted fire watches in the affected areas and entered the finding into the corrective action program as Condition Report 200401063. The inspectors found the condition still existing without repairs or engineering evaluation to accept the condition as is.

The performance deficiency was the failure to implement procedures to ensure that fire barriers protecting safety-related areas were functional. This finding affected the mitigating systems cornerstone and was considered more than minor since it affected the cornerstone attribute of Protection Against External Factors. Based on Manual Chapter 0609, Appendix F, the finding was determined to be in the Fire Confinement category because the fire barrier separated one fire area from another. The inspectors assigned a moderate degradation rating since there was defense-in-depth and more than 20 feet of horizontal separation between the degraded barrier and safety-related equipment. The inspectors performed the Phase 1 qualitative screening check and characterized the finding as having very low safety significance (Green) since the existing barrier would protect all safety-related equipment in the exposed fire area for at least a minimum of 20 minutes. The licensee is continuing the hourly fire watch in the areas as an interim compensatory measure.

Example 3: The licensee failed to take prompt corrective action to resolve an NRC-identified non-cited violation of 10 CFR Part 50, Appendix

R, for failure to provide fire protection features for structures, systems, and components important to achieve and maintain cold shutdown or having the capability of repairing these components within 72 hours. The raw water pumps are safety-related pumps located in the intake structure and are required for the plant to achieve and maintain cold shutdown conditions. The pumps receive power from the auxiliary building via underground cables. In Manhole 5 the cables are in trays located on a nonrated concrete wall that separates the two trains. The licensee did not provide proper cable separation nor the necessary fire protection features for the raw water pump cabling in Manhole 5. In addition, the licensee did not have a procedure and materials available to repair the cabling within 72 hours. NRC Inspection Report 05000285/2004003 documented a Green noncited violation of 10 CFR Part 50, Appendix R. The licensee had entered this finding into the corrective action program as Condition Report 200400348 and had established an hourly fire watch in the area above Manhole 5 as an interim compensatory measure. The inspectors found that repair procedures had not been developed and repair materials had not been designated.

The performance deficiency was the failure to provide fire protection features for structures, systems, and components important to achieve and maintain cold shutdown or having the capability of repairing these components within 72 hours as required by 10 CFR Part 50, Appendix R. This finding affected the mitigating systems cornerstone and was considered more than minor since it affected the cornerstone attribute of Protection Against External Factors. Based on Manual Chapter 0609, Appendix F, the finding was determined to be in the Cold Shutdown category since the raw water pumps are needed to achieve and maintain cold shutdown. The inspectors assigned a moderate degradation rating because the concrete partition separating the trains would provide some protection. The inspectors performed the Phase 1 qualitative screening check and characterized the finding as having very low safety significance (Green) since the finding only affected the ability to reach and maintain cold shutdown conditions. The licensee is continuing the hourly fire watch in the area above Manhole 5 as an interim compensatory measure.

Inspection Report# : [2005008\(pdf\)](#)



Significance: Sep 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Abnormal Operating Procedure for Loss of Raw Water

The team identified a noncited violation of Fort Calhoun Technical Specification 5.8, "Procedures," for failure to properly develop and implement a technical specification required procedure. Technical Specification 5.8 states, in part, that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Item 6g of Appendix A to Regulatory Guide 1.33 requires a procedure to combat a loss-of-service water (at Fort Calhoun service water is identified as the raw water system). Contrary to this, Fort Calhoun Abnormal Operating Procedure AOP-18, "Loss of Raw Water," was inadequate with respect to the connection of a back-up water source to the "A" component cooling water heat exchanger. The procedure requires that a fire water hose be connected to the raw water drain of the "A" component cooling water heat exchanger, however, the physical orientation of the connection and limited clearance with the adjacent wall would result in the fire water hose being kinked, which would restrict flow through this heat exchanger.

This finding was a performance deficiency because the inadequate connection was not identified during verification of the adequacy of steps in Abnormal Operating Procedure AOP-18. The finding was greater than minor because it affected the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events, in that, if left uncorrected could result in the plant not being able to sustain long-term decay heat removal under specific conditions. This finding was of very low safety significance because there has never been an instance when fire water has been called upon to provide cooling to the "A" component cooling water heat exchanger. This issue was entered into the licensee's corrective action program as Condition Report 200504153. (Section 1R21.5(1))

Inspection Report# : [2005011\(pdf\)](#)



Significance: Sep 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Analysis for Using Fire Water as a Backup for Raw Water

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III (Design Control), for the failure to perform a complete and adequate analysis of the design conditions that exist for using fire water as a backup raw water source in Abnormal Operating Procedure AOP-18, "Loss of Raw Water." Specifically, the following technical errors in Calculation 203.19.05, "The Feasibility of Using Firewater for Cooling the Component Cooling Water System," Revision 4/26/88, were identified: the licensee failed to analyze river water temperatures at a maximum inlet temperature of 90°F as described in the Updated Safety Analysis Report and instead performed the analysis with a less conservative inlet temperature of 85°F; the supporting design documentation assumes the use of two of three Component Cooling Water Heat Exchangers A, C or D (which excludes heat exchanger "B") while Abnormal Operating Procedure AOP-18 allows the use of any two heat exchangers, and; Abnormal Operating Procedure AOP-18 includes steps to bring the reactor coolant temperature to 300°F, however, the design analysis only takes into account the reactor coolant temperature being held at a hot shutdown condition of 515°F.

The failure to perform adequate design analyses to support required procedures was a performance deficiency. The issue had more than minor safety significance because it impacted the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that mitigate plant accidents in that not providing an adequate analysis for the use of firewater could prevent proper cooling of the reactor coolant system. The finding was of very low safety significance because the procedure has never been required to be used. This issue has been entered into the licensee's corrective action program as Condition Report 200504328. (Section 1R21.1)

Inspection Report# : [2005011\(pdf\)](#)

G

Significance: Sep 02, 2005

Identified By: NRC

Item Type: FIN Finding

Potential Design Vulnerability of Intake Structure

The team identified a finding in that the licensee failed to address a change in the intake structure design conditions and, as a result, adequately ensure that the raw water system would function reliably. Specifically, over time, the river bottom has build up to a level 2 feet above the floor of the intake structure. This has allowed small rocks to regularly enter the raw water system and trip the raw water strainers and periodically impact the operation of the traveling screens. This change in river conditions represents a design vulnerability with a potential to cause a loss of screens and raw water pumps. Additionally, there was no formal preventive maintenance in place to sound the river bottom and no systematic analysis to assess any impact.

This finding was more than minor because it affected the availability, reliability, and capability of the raw water system under accident conditions. This design condition was not contrary to any regulatory requirements or the licensing bases. Consequently, it was not considered to be a violation of regulatory requirement. The finding was of very low safety significance because it did not represent an actual loss-of-safety function. However, this finding had problem identification and resolution aspects because of the longstanding nature of the problem. (Section 1R21.5(3))

Inspection Report# : [2005011\(pdf\)](#)

G

Significance: Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to ensure that fire barriers protecting safety-related areas were functional

A noncited violation of Technical Specification 5.8.1.c, Fire Protection Program Implementation, was identified for the failure to implement procedures to ensure that fire barriers protecting safety-related areas were functional. Specifically, between Rooms 1 and 58, and between Rooms 1 and 30, openings existed in a barrier that would have allowed flame propagation between two respective fire areas.

This finding was more than minor since it was associated with the protection against external factors attribute of the mitigating systems cornerstone. Since the finding occurred while shutdown, Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process, is not applicable for determining the significance of the issue. Regional management determined that the finding was of very low significance (Green). The finding was evaluated considering Manual Chapter 0609, Appendix F as a bounding case and was used as guidance to determine the significance of the finding. The finding was determined to be in the fire confinement category because the fire barrier separated one fire area from another. The inspectors assigned a moderate degradation rating since there was defense-in-depth and no potential damage targets in the exposed fire area that were unique from those in the exposing fire area. The inspectors, using a deterministic process and the guidance of the Phase 1 qualitative screening check, characterized the finding as having very low safety significance (Green) since the distance between safety-related components would protect the equipment in the exposed fire area. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005002\(pdf\)](#)

G

Significance: Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to translate design basis of the turbine driven auxillary feedwater pump into procedures

A noncited violation of 10 CFR Part 50, Appendix B, Criterion III, was identified based on the licensee's failure to translate design basis information into specification drawings, procedures, and instructions. Specifically, the licensee failed to maintain design control of the turbine-driven auxiliary feedwater pump to ensure turbine casing condensate drains would function during accident conditions involving loss of condenser vacuum.

The performance deficiency was a failure to translate the design basis of the plant to maintain the function of the auxiliary feedwater system during a loss of offsite power or other event causing a loss of condenser vacuum. This finding was more than minor because it was similar to Example 3.a of Appendix E in Inspection Manual Chapter 0612. The issue screened out as a Green finding because it was a design or qualification deficiency that was confirmed not to result in a loss of function as defined by NRC Generic Letter 91-18. Based on previous opportunities to recognize and correct this condition, a problem identification and resolution aspect was identified for this finding. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005002\(pdf\)](#)

G

Significance: Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to include quantitative acceptance criteria for containment protective coatings inspection

A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, was identified based on the licensee's procedures not including appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, the containment protective coatings procedure did not contain appropriate criteria to inspect the condition of safety-related coatings.

This finding affected the Mitigating Systems cornerstone and was considered more than minor because it affected the Procedure Quality attribute of the cornerstone. Specifically appropriate quantitative acceptance criteria was not provided to ensure that representative areas were selected for review within the coatings program. The finding was characterized under the significance determination process as having very low safety significance because the as-found reactor vessel head paint condition did not challenge the debris loading assumptions of the containment sumps and no actual loss of safety function occurred. Based on previous opportunities to recognize and correct this condition, a problem identification and resolution aspect was identified for this finding. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005002\(pdf\)](#)

W

Significance: Feb 24, 2005

Identified By: NRC

Item Type: VIO Violation

Emergency Diesel Generator 2 Inoperable in Excess of Technical Specifications due to Failed Fuse

A violation of 10 CFR Part 50, Appendix 6, Criterion XVI, was identified for the failure to ensure that conditions adverse to quality, such as failures, malfunctions, etc., are promptly identified and corrected. Specifically, on July 21, 2004, during surveillance testing of Emergency Diesel Generator 2, the licensee failed to promptly identify and correct a failure of Fuse 2FU in the emergency diesel generator excitation circuit. The failure to identify and correct this condition resulted in Emergency Diesel Generator 2 being inoperable from July 21 to August 19, 2004, a period of 29 days, exceeding Technical Specification 2.7 allowed outage time of 7 days during any month when the reactor coolant system temperature was greater than 300°F.

This finding was considered more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone in that the licensee failed to promptly identify and correct a failed fuse in the Emergency Diesel Generator 2 excitation circuit that left the emergency diesel generator inoperable for a period of 29 days. The finding was characterized under the significance determination process as having low to moderate safety significance because Emergency Diesel Generator 2 was unavailable to respond upon demand for a loss of off-site power and would have been unable to perform its mitigating system function.

On July 17, 2005, the NRC completed a supplemental inspection to assess the licensee's evaluation associated with the inoperability of Emergency Diesel Generator 2. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Report 05000285/2005010. During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspectors determined that the licensee performed a comprehensive evaluation of the inoperable diesel. The licensee's evaluation identified the primary root causes of the performance issue to be premature aging of emergency diesel generators fuses, and a lack of formality and rigor by the operators in responding to computer generated alarms. The licensee has taken corrective actions to address both root causes as well as other issues identified as contributing causes.

Inspection Report# : [2005010\(pdf\)](#)

Inspection Report# : [2005012\(pdf\)](#)

G

Significance: Mar 10, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure One Train of Systems Required for Safe Shutdown is Free of Fire Damage

A Green noncited violation of 10 CFR 50, Appendix R, Section III.G.1 was identified for failure to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency station(s) is free of fire damage. For example, the reactor coolant gas vent system is designed to permit venting of the reactor vessel head and pressurizer steam space. The system consists of six valves. Spurious opening of three valves is sufficient to open both vent paths. Each vent path has an orifice such that the flow through one vent path is less than the reactor coolant makeup capability of one charging pump. Opening both flow paths, however, would exceed the capacity of a single charging pump. The team identified a fire area where fire damage could open both vent paths and leave only one charging pump available.

This finding is greater than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences (i.e., core damage). This issue was identified as an apparent violation of 10 CFR 50, Appendix R, Section III.G.1.a during a previous fire protection triennial inspection in 2000. The issue was evaluated using the significance determination process, and was determined to be within the licensee response band (very low safety significance). In 2000, the licensee disagreed that postulating multiple fire-induced circuit failures was required by NRC regulations or its operating license. Because licensees have had numerous interpretations of the regulations concerning circuit analysis, the NRC temporarily suspended the associated circuits portion of the fire protection inspection. The team revisited this finding and conducted the inspection consistent with the approach explained in NRC Regulatory Issue Summary 2004-03, Revision 1, "Risk-Informed Approach for Post-Fire Safe-Shutdown Circuit Inspections".

Inspection Report# : [2005008\(pdf\)](#)

Barrier Integrity

G**Significance:** Sep 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Reconcile Specification to ASME Code Requirements for Air Accumulators.

The team identified a noncited violation of 10 CFR 50.55a(b) for the failure to satisfy the requirements of the ASME Boiler and Pressure Vessel Code. ASME Code Section VIII, Subsection UG-10.a.3, requires that any material produced to a specification other than a Code-approved specification may be accepted provided that documentation, including the initial certification by the material manufacturer, is provided stating that the material meets all the requirements of the designated Code-approved specification. Contrary to this requirement, the licensee procured air accumulator tanks for the containment air cooling system isolation valves as commercial-grade tanks designed in accordance with Department of Transportation (DOT) Specification 4BA240 and did not reconcile the requirements of this specification with the corresponding ASME Section VIII requirements.

This finding was a performance deficiency because the licensee failed to assure that the accumulators satisfied ASME Code requirements. The violation is greater than minor because an analysis was required in order to determine whether the tanks were acceptable for their application and because it was associated with the human performance attribute of the barrier integrity cornerstone and impacted the cornerstone objective of providing reasonable assurance that physical design barriers, in this case the isolation valves, protect the public from radio nuclide releases caused by accidents or events. The finding was of very low safety significance because a preliminary analysis indicated that code allowable stresses had not been exceeded. This issue was entered into the licensee's corrective action program as Condition Report 200504244. (Section 1R21.5(2))

Inspection Report# : [2005011\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to follow the procedure for transferring fuel in the reactor vessel.

A noncited violation was identified as a result of the failure of the refueling machine operators to follow the procedure for transferring fuel in the reactor vessel as required by Technical Specification 5.8.1.a. This failure resulted in not identifying that fuel assembly Y019 was improperly seated into core location H17. This finding also had crosscutting aspects associated with human performance in that the operators failed to follow procedures as required.

This finding was more than minor since it is associated with the fuel cladding human performance attribute of the cornerstone. The finding was characterized as having very low safety significance because there was no damage to fuel pins or the fuel assembly.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to follow procedures for ensuring qualification of contractor.

A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Procedures," was identified because the licensee failed to follow the procedure for ensuring that an outside contractor was properly qualified to perform safety significant activities under Omaha Public Power District's established quality assurance plan. Specifically, the licensee failed to review and approve the R. Brooks and Associates, Inc., eddy-current testing personnel certifications, equipment calibrations and procedures prior to performing work. This finding had human performance crosscutting aspects regarding failure to follow procedures.

The finding was greater than minor because it was associated with the performance attribute of the barrier integrity cornerstone and impacted the cornerstone objective of providing reasonable assurance that physical design barriers, in this case the reactor vessel, protect the public from radionuclide releases caused by accidents or events.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to certify nondestructive testing personnel.

A noncited violation of 10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes," was identified because the licensee failed to

adequately certify their nondestructive testing personnel in accordance with the American Society of Nondestructive Testing, "Standard for Qualification and Certification of Nondestructive Testing Personnel" CP-189-1991. This finding had human performance crosscutting aspects regarding failure to follow nondestructive testing personnel certification procedures.

The finding was greater than minor because it was associated with the performance attribute of the barrier integrity cornerstone and impacted the cornerstone objective of providing reasonable assurance that physical design barriers, in this case the reactor vessel, protect the public from radionuclide releases caused by accidents or events.

Inspection Report# : [2005003\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: FIN Finding

Failure to Adequately Plan Work in Restricted High Radiation Areas

Green. The inspector identified a finding because performance deficiencies resulted in a collective dose for a work activity that exceeded five person-rem and 150 percent of the legitimate dose estimate. Radiation Work

Permit 05-3530, "Reactor Vessel Head Inspection in Restricted High Radiation Areas," was estimated to require approximately three person-rem to complete, but actually accrued approximately 13.6 person-rem. The licensee used an unproven technology to inspect for defects. As a result, equipment problems caused the planned work duration and dose to be greatly exceeded. The project was poorly planned, poorly implemented, and poorly overseen by management. The finding was placed into the licensee's corrective action program as Condition Report 200501853.

This finding was more than minor because it was associated with the occupational radiation safety cornerstone attribute (al low as reasonably achievable planning/estimated dose) and affected the associated cornerstone objective in that it increased the collective dose. When processed through the occupational radiation safety significance determination process, this al low as reasonably achievable finding was found to have no more than very low safety significance because: (1) the finding was related to al low as reasonably achievable planning or work control, but (2) the licensee's 3-year rolling average collective dose was not greater than 135 person-rem. In addition, this finding had crosscutting aspects associated with human performance, in that the poorly managed project resulted in the finding.

Inspection Report# : [2005004\(pdf\)](#)

Significance:  Sep 30, 2005

Identified By: NRC

Item Type: FIN Finding

Failure to adequately plan emergent work in restricted high radiation areas

Green. The inspector identified a finding because the licensee did not adequately plan for emergent work, causing the collective dose for the work activity to exceed 5 person-rem and 150 percent of the legitimate dose estimate. Radiation Work Permit 05-3519, "SI-220 Valve Replacement in Restricted High Radiation Areas," was estimated to require approximately 3 person-rem to complete, but actually accrued approximately 9.8 person-rem. The licensee failed to formulate reasonably accurate dose estimates and plan dose saving measure for the emergent work after problems occurred. The finding was placed into the licensee's corrective action program as Condition Reports 200504080 and 200504274.

This finding was more than minor because it was associated with the occupational radiation safety cornerstone attribute (al low as reasonably achievable planning/estimated dose) and affected the associated cornerstone objective in that it increased the collective dose. When processed through the occupational radiation safety significance determination process, this al low as reasonably achievable finding was found to have no more than very low safety significance because: (1) the finding was related to al low as reasonably achievable planning or work control, but (2) the licensee's 3-year rolling average collective dose was not greater than 135 person-rem. In addition, this finding had crosscutting aspects associated with human performance and problem identification and resolution. The ALARA planner's failure to take proper actions directly caused the finding. The work group failed to address problems that caused the unplanned dose through the corrective action program.

Inspection Report# : [2005004\(pdf\)](#)

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate ventilation procedure resulting in internal contaminations to personnel.

A non-cited violation of 10 CFR 50 Appendix B, Criterion V was identified based on the licensee's operational procedure for Containment Building ventilation being inadequate. Specifically the procedure that controlled the containment ventilation fans did not state the order to start the supply and exhaust fans. This finding had human performance crosscutting aspects in that the subject procedure was inadequate.

The performance deficiency was an inadequate containment building ventilation system operational procedure. This finding was more than minor because it affected the Occupational Radiation Safety cornerstone objective to protect worker health and safety from radiation and radioactive materials. Specifically, the Plant Facilities/Equipment Attribute of the cornerstone was affected and involved unplanned and unintended dose to workers. The issue screened out as Green because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This condition has been entered into the licensee's corrective action program.

Inspection Report# : [2005003\(pdf\)](#)

G**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to comply with a Technical Specification required radiation work procedure.

A self revealing noncited violation was reviewed for the failure to comply with a Technical Specification required radiation work procedure. Specifically on April 7, 2005, an individual performing work in a high radiation area received a dose rate alarm and did not notify radiation protection personnel. This finding had a crosscutting aspect with respect to human performance because the worker did not notify radiation protection personnel of a dose rate alarm in a high radiation area which directly contributed to the finding.

The finding was greater than minor because it was associated with the Occupational Radiation Safety attribute of Program and Process and affects the cornerstone objective. The failure to comply with a radiation work procedure could result in an increase in a personnel dose. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding was placed into the licensee's corrective action program as Condition Report 2005-1912

Inspection Report# : [2005003\(pdf\)](#)

G**Significance:** Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to comply with a radiation work permit requirement.

A self revealing noncited violation was reviewed for the failure to comply with a radiation work permit requirement. Specifically on March 3, 2005, a job supervisor and a worker did not notify radiation protection of a tool change, from a band saw to a grinder, as required by the radiation work permit. Contamination levels were as high as 500 milirad per hour per 100 centimeters square. As a result, several individuals participating in the work activity became contaminated and alarmed the personnel contamination monitors upon exiting the Radiologically Controlled Area. Four individuals had low levels of internal contamination. The maximum dose assigned was 37 millirem. This finding had a crosscutting aspect with respect to human performance because the job supervisor or worker did not inform radiation protection before making a change in approved cutting instruments which directly contributed to the finding.

The finding was greater than minor because it was associated with the Occupational Radiation Safety attribute of Program and Process and affected the cornerstone objective. The failure to comply with a radiation work permit requirement resulted in the low-level internal contamination of four workers. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding was placed into the licensee's corrective action program as Condition Report 2005-0943

Inspection Report# : [2005003\(pdf\)](#)

G**Significance:** Mar 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to control a restricted high radiation area per technical specifications 5.11.1 and 5.11.2

A self-revealing, noncited violation was reviewed because the licensee failed to conspicuously post, barricade, lock or guard a restricted high radiation area per Technical Specifications 5.11.1 and 5.11.2. On March 4, 2005, a worker unexpectedly received an electronic dosimeter dose rate alarm when he entered the lower elevation of the Steam Generator A bay area. Subsequently, the licensee found dose rates that measured 1,500 to 2,000 millirem per hour at 30 centimeters in the area of Valve RC-163 and posted and barricaded the area.

This finding is more than minor because it affected the Occupational Radiation Safety cornerstone objective to protect worker health and safety from radiation and radioactive materials. This finding was associated with the cornerstone attribute of Exposure Control and involved unplanned and unintended dose to a worker. The Occupational Radiation Safety Significance Determination Process was used to analyze the significance of the finding, which was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding also had crosscutting aspects associated with human performance. The radiation protection organization did not inform its technicians about changing

radiological conditions in the area of Valve RC-163 due to plant operations and based on historical data. This occurrence was entered into the licensee's corrective action program.

Inspection Report# : [2005002\(pdf\)](#)

G

Significance: Mar 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to perform an adequate survey to evaluate radiological hazards per 10 CFR 20.1501

An NRC-Identified, noncited violation of 10 CFR 20.1501(a) was identified because the licensee's radiation protection staff failed to perform an adequate survey to evaluate radiological hazards. Specifically, on March 17, 2005, at approximately 5 a.m. the particulate, iodine, and noble-gas radiation monitor located outside of the main containment hatch alarmed. The radiation monitor indicated increasing airborne radioactivity starting at 3:30 a.m.; however, the licensee did not evaluate the cause of the alarm until 6 a.m. Consequently, 11 workers received unplanned and unintended low-level intakes (less than 5 millirem) of Co-60 because the extent of potential radiological hazards was not fully evaluated.

This finding is more than minor because it affected the Occupational Radiation Safety cornerstone objective to protect worker health and safety from radiation and radioactive materials. This finding was associated with the cornerstone attribute of exposure control and involved unplanned and unintended dose to workers. The Occupational Radiation Safety Significance Determination Process was used to analyze the significance of the finding which was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding also had crosscutting aspects associated with human performance. The radiation protection organization did not have an effective process for its technicians to evaluate potential radiological hazards associated with alarming airborne radiation monitors. This occurrence was entered into the licensee's corrective action program.

Inspection Report# : [2005002\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Significance: N/A Nov 30, 2005

Identified By: NRC

Item Type: FIN Finding

Biennial Assessment of Identification and Resolution of Problems

The team reviewed approximately 183 condition reports, notifications, root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. Overall, the licensee had an adequate problem identification and resolution program. However, the licensee did not consistently identify problems at the first opportunity and sometimes NRC involvement was necessary to ensure proper identification. In addition, untimely corrective measures, particularly in response to NRC identified violations and fire protection concerns, periodically challenged the site. Nonetheless, in most cases the licensee properly identified problems, evaluated and prioritized issues, and implemented acceptable corrective measures.

Based on the interviews conducted, the team concluded that a positive safety conscious work environment exists at the Fort Calhoun Station. Employees felt free to raise safety concerns to their supervision, to the employee concerns program, and to the NRC. The team received a few isolated comments regarding reluctance to contact the employee concerns program or the NRC due to concern that their identity would be revealed to the licensee. The team determined that licensee management was aware of this perception and was taking actions to address it. All the interviewees believed that potential safety issues were being addressed.

Inspection Report# : [2005009\(pdf\)](#)

Last modified : March 03, 2006