

## Cooper 1Q/2006 Plant Inspection Findings

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### Initiating Events

**Significance:**  Sep 08, 2005

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Corrective Actions for a Fire in the Multi-Purpose Facility**

The team identified a finding involving the failure to meet established corrective action standards following a fire in the multi-purpose facility. The specified corrective measures were not specific, measurable, accountable, or timely, in that, not all personnel responsible for implementation of the corrective actions understood what was required and there was no mechanism to ensure interim corrective actions were implemented on the required frequency. This finding had cross-cutting aspects associated with effectiveness of corrective actions.

This finding was more than minor because it affected the initiating events cornerstone attribute of protection against external factors such as fires. The team evaluated the safety significance of this finding using Manual Chapter 0609, "Significance Determination Process," Appendix F, and determined that the finding was of very low safety significance because it caused little degradation to fire prevention and administrative controls. This finding was entered in the licensee's corrective action program as Condition Reports 2005-4456 and 2005-4501  
Inspection Report# : [2005009\(pdf\)](#)

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### Mitigating Systems

**Significance:**  Mar 24, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Maintain Design Control of Service Water Discharge Strainers**

The NRC identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," regarding the use of unqualified parts in the service water discharge strainers. Specifically, between 1994 and 2004, the mechanical components used in the strainers were classified as nonessential. This contributed to the failure of Service Water Discharge Strainer B on May 30, 2004. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2004-04050.

The finding is more than minor because it is associated with the Mitigating Systems cornerstone attribute of design control and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," were used to conclude that a Phase 2 analysis was required because the finding also increased the likelihood of a loss of service water which is an initiating event for Cooper Nuclear Station. The inspectors performed a Phase 2 analysis using Appendix A, "Technical Basis For At Power Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and the Phase 2 worksheets for Cooper Nuclear Station. Based on the results of a Phase 3 analysis, the finding is determined to have very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that, following a similar violation documented in NRC Inspection Report 05000298/2003002-05, the licensee had an opportunity to identify and correct this issue prior to the failure of the strainer.  
Inspection Report# : [2006002\(pdf\)](#)

**Significance:**  Mar 14, 2006

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Implement Commitment in Response to Generic Letter 89-13**

The inspectors identified a Green finding for failure of the licensee to implement a commitment made to the NRC. Specifically, the licensee did not carry out the programmatic service water intake bay inspections described in their response to NRC Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment."

The finding was more than minor since not performing the inspections could become a more significant safety concern if left uncorrected, as degraded conditions in the service water intake bay could affect the operability of the ultimate heat sink for the facility. This finding is not suitable for significance determination process evaluation, but was reviewed by NRC management and determined to be of very low safety significance due to the fact that it did not result in an increase in the likelihood of an initiating event and did not result in the actual degradation of a mitigating system. The inspectors identified crosscutting aspects in problem identification and resolution in that this disparity was

identified by the NRC in 1994 and again by the licensee in 2003 without any corrective actions being taken.  
Inspection Report# : [2005015\(pdf\)](#)

**G**

**Significance:** Jan 23, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Follow Procedure Renders Emergency Diesel Generator and One Offsite Power Source Inoperable**

A self-revealing noncited violation of Technical Specification 5.4.1.a was identified regarding the failure of operations personnel to follow procedures for testing safety-related undervoltage relays. Specifically, on January 23, 2006, two licensed operators failed to install a jumper correctly while performing Surveillance Test 6.2EE302, "4160V Bus 1G Undervoltage Relay and Relay Timer Functional Test (Div 2)," Revision 13. This rendered Emergency Diesel Generator 2 and the emergency stations service transformer inoperable. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2006-00485.

The finding is more than minor because it is associated with the Mitigating Systems cornerstone attribute of human performance and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it did not represent the loss of a safety function of a single train for greater than its Technical Specification allowed outage time. The cause of the finding is related to the crosscutting element of human performance in that operations personnel failed to follow the surveillance procedure.

Inspection Report# : [2006002\(pdf\)](#)

**G**

**Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO IMPLEMENT FOREIGN MATERIAL CONTROLS FOR SERVICE WATER INTAKE BAY**

An NRC identified non-cited violation of 10 CFR 50, Appendix B, Criterion V was identified regarding the failure to implement procedure requirements for foreign material exclusion. The licensee failed to establish Zone 1 controls in accordance with Administrative Procedure 0.45, "Foreign Material Exclusion Program," during modification of the service water intake bay traveling water screens. This resulted in the introduction of foreign material into the intake bay which had the potential to adversely affect the service water system. This was entered into the licensee's corrective action program as Condition Report CR-CNS-2005-08930.

The finding is greater than minor because if left uncorrected, the continued introduction of foreign material into the service water intake bay would become a more significant safety concern. The continued failure to implement this program could result in the loss of safety function of a safety-related system. The finding affected the Mitigating Systems cornerstone. Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the finding was determined to have very low safety significance because there was no loss of function for the service water.

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

**G**

**Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**FAILURE TO CORRECT A DEGRADED CONDITION RESULTS IN INOPERABILITY OF THE REACTOR EQUIPMENT COOLING SYSTEM.**

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified regarding the failure to correct a degraded condition on the reactor equipment cooling system. A leaking manual isolation valve was identified in the corrective action program in July 2002, but the condition was never corrected and the corrective action documents were closed. In August 2005, this valve was relied upon to maintain system integrity during maintenance. The leaking valve resulted in the system being declared inoperable and required entry into Technical Specification 3.0.3. The licensee entered this into their corrective action program as Condition Report CR-CNS-2005-05588.

The finding is greater than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the licensee was able to demonstrate that there was no loss of safety function for any mitigating systems and the finding did not screen as risk significant due to external initiating events. The cause of the finding is related to the crosscutting element of problem identification and resolution in that a condition adverse to quality was not corrected in 2003.

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

**G**

**Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**FAILURE TO IMPLEMENT SCRAM ACTIONS RESULTS IN LEVEL 8 REACTOR FEED PUMP TRIP**

A self-revealing, noncited violation of Technical Specification 5.4.1.a was identified regarding implementation of the scram procedure during response to a manual reactor scram on September 23, 2005. During scram recovery actions, operators failed to minimize feedwater to the reactor which resulted in the only operating reactor feed pump tripping on high reactor vessel water level. The licensee entered this into their corrective action program as Condition Report CR-CNS-2005-06960.

The finding is greater than minor because it is associated with the Mitigating Systems cornerstone attribute of human performance and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because there was no loss of safety function for the mitigating system and the finding did not screen as risk significant due to external initiating events. The cause of the finding is related to the crosscutting element of human performance in that it was reasonable to have expected the reactor operator to correctly prioritize the scram actions and prevent the loss of reactor feed.

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

**G**

**Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INEFFECTIVE CORRECTIVE ACTION RESULTS IN EMERGENCY DIESEL GENERATOR INOPERABILITY**

A self-revealing, noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified regarding inadequate corrective actions for repetitive failures of a lube oil instrument line on Emergency Diesel Generator 1. Between 1989 and 2004, the configuration of this instrument was susceptible to high-cycle fatigue failures and experienced three such failures. Corrective actions only replaced the failed material; the line remained in a configuration susceptible to further failures. On December 30, 2004, the line catastrophically failed during a monthly surveillance test, resulting in 100-150 gallons of oil spraying into the room. The licensee entered this into their corrective action program as Condition Report CR-CNS-2004-07947.

The finding is greater than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," were used to conclude that a Phase 2 analysis was required because the inspectors determined that there was a loss of safety function of the single train for greater than the Technical Specification allowed outage time. The inspectors performed a Phase 2 analysis using Appendix A, "Technical Basis for At-Power Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and the Phase 2 worksheets for Cooper Nuclear Station. Based on the results of a Phase 3 analysis, the finding is determined to have very low safety significance. The cause of this finding is related to the crosscutting element of problem identification and resolution in that the licensee failed to take corrective actions to preclude repetitive failures of the lube oil instrument line.

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

**G**

**Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**INEFFECTIVE CORRECTIVE ACTION RESULTS IN THE FAILURE OF A SAFETY-RELATED 4160 V BREAKER**

A self-revealing, noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified regarding inadequate corrective actions for a repetitive failure of a safety-related 4160 volt breaker. In December 2000, a safety-related breaker failed to operate due to inadequate clearances between internal components. Corrective actions for this failure did not prevent an identical failure of the breaker for Service Water Pump A in December 2004. The licensee entered this into their corrective action program as Condition Report CR-CNS-2004-07938.

The finding is greater than minor because it is associated with the Mitigating Systems cornerstone attribute of equipment performance and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding is also associated with the Initiating Events cornerstone attribute of equipment performance and affects the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," were used to conclude that a Phase 2 analysis was required because two reactor safety cornerstones were affected. The inspectors performed a Phase 2 analysis using Appendix A, "Technical Basis for At-Power Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and the Phase 2 worksheets for Cooper Nuclear Station. Based on the results of a Phase 3 analysis, the finding is determined to have very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that a corrective action designed to prevent recurrence of the failure in 2004 was closed without being implemented.

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

**G**

**Significance:** Dec 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Unauthorized Modification to Safety-Related Motor-Operated Valves**

The inspector identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, regarding the unauthorized modification of two safety-related motor-operated valves. On September 25, 2005, the licensee modified the mechanical interlocks inside the motor starters for these valves without following the requirements in their modification procedure. As a result, the required torque values specified in the seismic qualification report for this equipment were not used during the modification. The licensee entered this into their corrective action program as CR-CNS-2005-07542 and remounted the interlocks using the appropriate torque values.

The finding was more than minor since configuration control and the maintenance of the plant's design basis is a basic principle of safe plant operation and, if left uncorrected, could become a more significant safety concern. The finding was determined to be of very low safety significance since it only involved a design or qualification deficiency that did not result in the loss of a safety function. The finding also had cross-cutting aspects associated with human performance based on the fact that appropriate administrative barriers were in place to ensure that the modifications were performed in accordance with procedures  
Inspection Report# : [2005014\(pdf\)](#)

**Significance:**  Dec 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Actions for Motor-Operated Valve Failures**

The inspector identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, regarding inadequate corrective actions for motor-operated valve failures. Eight similar valve failures occurred over a 6-year period; however, corrective actions for those failures did not prevent two similar failures in September 2005. The licensee entered this into their corrective action program as CR-CNS-2005-06968.

The finding was more than minor since it affected the cornerstone attributes of availability and reliability of mitigating equipment as well as the operational capabilities of primary containment. The safety significance was assessed using Phase 2 of the Significance Determination Process; however, the performance deficiency did not increase the initiating event frequencies or degrade the mitigating functions described in the Phase 2 analysis. Therefore, the finding was determined to be of very low safety significance. There were also crosscutting aspects associated with problem identification and resolution based on the fact that it was within the licensee's capability to have determined and corrected the valve failure mechanism 2 months prior to the failures in September 2005, yet they failed to do so.  
Inspection Report# : [2005014\(pdf\)](#)

**Significance:**  Oct 20, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Actions for Service Water Plugging Events**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for failure of the licensee to take adequate and timely corrective action to prevent recurrence of a significant condition adverse to quality. Specifically, the licensee's corrective actions taken since a service water strainer clogging event in November 2004 did not preclude the event from occurring in October 2005. The effect of these events was to cause a loss of both trains of service water for a short period of time and potentially challenge the cooling function to downstream components.

This finding affected the Initiating Events and Mitigating Systems Cornerstones since the loss of service water is an initiating event and the service water system is required to mitigate the consequences of an accident. The finding was more than minor since it could reasonably be viewed as a precursor to a significant event and it affected the cornerstone attribute of availability and reliability of mitigating equipment. Since two cornerstones were affected by the finding, a Significance Determination Process Phase 2 analysis was required. The finding was determined to be Green. Crosscutting aspects associated with problem identification and resolution were identified based on the fact that it was within the licensee's capability to have determined and corrected the problem prior to the failures in October 2005, yet they failed to do so.  
Inspection Report# : [2005015\(pdf\)](#)

**Significance:**  Sep 08, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Comply with Technical Specification Required Actions for Two Inoperable Diesel Generators**

The team identified a noncited violation of Technical Specification 3.8.2, "AC [apparent cause] Sources-Shutdown." Specifically, on November 5, 2004, the licensee performed a surveillance procedure that resulted in rendering both emergency diesel generator inoperable, which was not permitted by the technical specifications. This violation had crosscutting aspects associated problem evaluation, in that, once the problem was identified, the licensee failed to properly identify the issue as a technical specification violation.

The finding was more than minor because it affected the mitigating systems cornerstone objective to ensure the availability of systems that respond to initiating events. Using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," the finding was determined to be of very low safety significance because it did not increase the likelihood of a system inventory, did not degrade the licensee's ability to terminate a leak path or add inventory, did not affect the ability to recover decay heat removal capability if lost, nor did it affect the safety relief valve availability to remove heat to the suppression pool. This finding was entered in the licensee's corrective action program as Condition Report 2005-4505  
Inspection Report# : [2005009\(pdf\)](#)

**G****Significance:** Sep 08, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Implement the Station Fire Watch Procedure**

The team identified a violation of Technical Specification 5.4.1.d for the failure to implement the station fire watch procedure. On June 16, 2005, the inspector toured the service water pump room and discovered that the fire watch was not alert or attentive to the area assigned. The fire watch was stationed in the service water pump room because the halon system had been tagged out to support maintenance in the room. This issue had human performance crosscutting aspects (procedure compliance).

The failure to implement the fire watch procedure was more than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The safety significance of this finding was evaluated using Manual Chapter 0609, "Significance Determination Process," Appendix F. The finding had very low safety significance because the inattentive fire watch constituted a low level of degradation. The fire watch was inattentive for no more than 2 hours and the probability of a fire for the exposure period was 1.5 E-6. In addition, in the event of a fire, the fire watch would have been alerted by the operational halon alarm. Other mitigating fire fighting equipment (fire extinguishers) and personnel (fire brigade) were still available. This finding was entered in the licensee's corrective action program as Condition Report 2005-4418

Inspection Report# : [2005009\(pdf\)](#)**G****Significance:** Jul 18, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Implement Manual Scram Actions**

The inspectors identified a noncited violation of Technical Specification 5.4.1 regarding the failure to follow station procedures which required operators to manually scram the reactor on concurrent high level alarms in Moisture Separators A and C. On July 7, 2003, operators received these alarms but did not scram the reactor.

This finding involved human performance during an event and was more than minor since it could be reasonably viewed as a precursor to a significant event. The purpose of a manual scram on high moisture separator levels is equipment protection for the main turbine; however, the failure of operators to manually scram the reactor under other circumstances could challenge reactor safety. The finding was determined to be of very low safety significance since all mitigation equipment was available during the transient. This finding also had crosscutting aspects associated with human performance since procedural guidance was clear and operators still failed to manually scram the reactor. The licensee entered this condition in their corrective action program as Resolve Condition Report 2004-0327.

Inspection Report# : [2005012\(pdf\)](#)**G****Significance:** Jul 18, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Implement Manual Scram Actions**

The inspectors identified a noncited violation of Technical Specification 5.4.1 regarding the failure to follow station procedures which required operators to manually scram the reactor even though the conditions requiring that action had just cleared. On July 7, 2003, operators failed to manually scram the reactor upon recognition that procedures required this even though the high moisture separator alarms had just cleared.

This finding involved human performance during an event and was more than minor since it could be reasonably viewed as a precursor to a significant event. The finding was determined to be of very low safety significance since all mitigation equipment was available during the transient. This finding also had crosscutting aspects associated with human performance since procedural guidance was clear and operators still failed to manually scram the reactor. The licensee entered this condition in their corrective action program as Resolve Condition Report 2004-0327.

Inspection Report# : [2005012\(pdf\)](#)**G****Significance:** Jul 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Design Control and Compliance with ASME Code Requirements for Inservice Test after Residual Heat Removal Pump Impeller Replacements, Section 1R21.2b1**

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which requires, in part, that design controls shall provide for verifying the adequacy of design by the use of a suitable testing program. Specifically, the team found that the testing after the impeller replacements did not verify the adequacy of the residual heat removal Pumps A and D's performance over the range of design conditions for which the pumps are used. The establishment of one performance point does not demonstrate that the slope of the pump performance curve has not changed.

Failure to follow Criterion III to adequately demonstrate that design requirements were met for testing of residual heat removal pumps after impeller replacement was a performance deficiency. The team determined this violation to be greater than minor because it affected the reactor

safety cornerstone objective of barrier integrity to provide reasonable assurance to maintain containment, in particular, the design control attribute to maintain structural integrity. The finding screened out in the Phase 1 worksheet in Inspection Manual Chapter 0609 as having very low safety significance because the team concluded that the finding did not result in an actual reduction in the pressure control function of the containment spray mode of the residual heat removal system.

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

**G**

**Significance:** Jul 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Demonstrate the Effectiveness of Maintenance, Section 1R21.2b2**

The team identified a noncited violation of 10 CFR 50.65(a)(2) for the failure to demonstrate that the performance or condition of the 125 Vdc battery chargers was effectively controlled through the performance of appropriate preventive maintenance, such that, the battery chargers remained capable of performing their intended functions.

Failure to demonstrate effective control through appropriate preventive maintenance for the 125 Vdc battery chargers was a performance deficiency. This finding is more than minor because it affects the Mitigating Systems cornerstone attributes of equipment reliability for the 125 Vdc battery chargers. Using the Phase 1 worksheet in Inspection Manual Chapter 0609, this violation was determined to be of very low safety significance because there was no actual loss of a safety function. The licensee entered this finding into their corrective action program as Condition Reports CR-CNS-2005-03823 and -03838.

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

**G**

**Significance:** Jul 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Controls to Assure Availability of Offsite Power Supplies to Safety-Related Buses for Safe Shutdown, Section 1R21.4b1**

A noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for failure to implement adequate measures to assure availability of the offsite power supplies. The team identified three examples of this finding, including the undetected loss of the computer-based contingency analyzer program used for monitoring the operability of offsite power sources, inadequate analyses for the second level undervoltage relay reset setpoint, and inadequate procedures for controlling the second level undervoltage relay reset setpoint. This issue was entered into the licensee's corrective action program under Condition Reports CR-CNS-2005-03498 and -03632.

The failure to implement adequate measures to assure the proper functioning of the contingency analyzer program, and to control the relay setpoints, represented a performance deficiency. This finding was more than minor since it affected the Mitigating Events cornerstone attribute of design control, that, if left uncorrected, could result in loss of both preferred ac power supplies needed to mitigate an accident. The issue screened as having very low safety significance in Phase I of the significance determination process, because it involved a design deficiency that was determined not to involve a loss of function in accordance with Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1.

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

**G**

**Significance:** Jul 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Non-conservative Calculation for AC Control Circuit Voltage Drop, Section 1R21.4b2**

A noncited violation of 10 CFR Part 50, Appendix B, Criterion III, was identified for failure to perform adequate calculations for ac control circuit voltage drop under degraded voltage conditions. The team identified that calculations to determine voltage drop in motor control center and 120 Vac distribution panel control circuits were nonconservative because they used incorrect data for contactor power factor, did not include all loads in the circuits, and failed to include series resistance because of devices, such as switch contacts and fuses. The cumulative effect of these errors could result in voltage below the existing acceptance criteria. Failure to perform adequate analysis of control circuit capability under degraded voltage conditions was a violation of 10 CFR Part 50, Appendix B, Criterion III. This issue was entered into the licensee's corrective action program under Condition Report CR-CNS-2005-3811.

Failure to perform conservative control circuit voltage drop calculations was a performance deficiency. This issue was more than minor because it affected the Mitigating System cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to a design basis accident by failing to assure control circuits have sufficient voltage to perform their function. The issue screened as having very low safety significance in Phase I of the significance determination process because it was a design deficiency that was not found to result in a loss of function in accordance with Generic Letter 91-18.

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

**G**

**Significance:** Jul 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Controls for 12.5 kV Subsystem Alignment, Section 1R21.4b4**

The team identified a noncited violation of Technical Specification 5.4.1(a) for failure to maintain adequate procedures for configuration control and for the implementation of technical specification-required surveillance for the 12.5 kV subsystem alignment. The team identified that the licensee removed a restriction on a previously prohibited 12.5 kV system alignment, but the evaluation justifying the change relied on a computer-based grid analyzer operated by the grid control center that could be out of service without the knowledge of the nuclear station. This was a violation of Technical Specification 5.4.1(a), which requires that the licensee establish and implement written procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for operation of offsite electrical systems. The licensee entered this finding into their corrective action program as Condition Report CR-CNS-2005-4145. This finding had problem identification and resolution cross-cutting aspects because corrective action for a related violation was negated by an inappropriate procedure change.

The failure to maintain adequate procedures for configuration control and for the implementation of technical specification-required surveillance represented a performance deficiency. This finding was more than minor since it affected the Mitigating Systems cornerstone attributes of configuration control that, if left uncorrected, could result in loss of one of the preferred ac power supplies needed to mitigate an accident. Based on the results of the Phase 1 worksheet in Inspection Manual Chapter 0609, this finding was determined to have very low safety significance because the team did not identify any instances where both offsite power sources were inoperable for greater than their allowed outage time.

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

**Significance:**  Jul 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Comply With Technical Specification Surveillance Requirements Due to an Inadequate Procedure 1R21.5b1**

The team identified a noncited violation of Criterion V, "Instructions, Procedures, and Drawings," of 10 CFR Part 50, Appendix B. Specifically, the licensee failed to demonstrate compliance with Technical Specification Surveillance Requirement 3.5.1.1 because of an inadequate surveillance procedure. Surveillance Requirement 3.5.1.1 requires that every 31 days the licensee must verify that the piping for each emergency core cooling system injection/spray subsystem is filled with water from the pump discharge valve to the injection valve. Surveillance Procedure 6.MISC.503, "31 Day Venting of Emergency Core Cooling System and RCIC Injection/Spray Subsystem," implements this requirement. The team identified that the procedure does not contain adequate acceptance criteria to qualitatively or quantitatively assess abnormal amounts of air that may be entrained in the high pressure core system and, therefore, does not fully implement technical specification requirements. The licensee entered this issue into the corrective action program as Condition Report CR-CNS-2005-03857. This finding also had crosscutting aspects regarding problem identification and resolution, in that, a similar issue was identified in 2001 Problem Identification Report 0010082704, dated May 3, 2001, but was not corrected in a timely manner.

Failure to demonstrate compliance with Technical Specification Surveillance Requirement 3.5.1.1 because of an inadequate surveillance procedure was a performance deficiency. The finding was greater than minor because it affected the Mitigating Systems cornerstone because the failure to assure that the emergency core cooling subsystem was full of water, from the pump discharge to the injection valve, did not provide reasonable assurance that the equipment would be available to complete its function. Using the Phase 1 worksheet in Inspection Manual Chapter 0609, this violation was determined to be of very low safety significance because there was no evidence a void currently exists in the piping and is no actual loss of a safety function.

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

**Significance:**  Jun 23, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Corrective Actions Result in High Pressure Coolant Injection System being Rendered Inoperable**

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified regarding inadequate corrective actions which resulted in the high pressure coolant injection system being rendered inoperable during scram recovery actions on April 15, 2005. During the scram recovery, operators disabled the system by placing the auxiliary oil pump in pull-to-lock rather than aligning the system to a standby condition as required by procedures. This was the third occurrence of this error in 2 years.

This finding was more than minor since it affected the availability of the high pressure coolant injection system which is relied upon to mitigate the consequences of an initiating event. Based on the Significance Determination Process Phase 1 screening, this finding was determined to have very low safety significance since it did not represent the actual loss of a safety function for greater than its Technical Specification allowed outage time and did not screen as risk significant due to external initiating events. This finding also had crosscutting aspects associated with problem identification and resolution since this was the third occurrence of this event and previous corrective actions were not comprehensive in addressing the causes. In addition, the condition report documenting this issue was incorrectly classified in the corrective action program until questioned by the inspectors. The licensee entered this finding into their corrective action program as CR-CNS-2005-02982.

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

**G****Significance:** Jun 23, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to take Adequate Corrective Actions for degraded conditions on Service Water Booster Pump System**

The inspectors identified a noncited violation of Appendix B, Criterion XVI of 10 CFR Part 50, for failure to take adequate corrective actions for degraded conditions on the service water booster pump system. On April 5, 2005, water intrusion into the service water Booster Pump A outboard bearing oil rendered the pump inoperable. This was the second occurrence. This finding was considered more than minor since it affected the operability, availability, and reliability of a mitigating system. It was considered to have very low safety significance, since it did not represent the actual loss of a safety function. It also had crosscutting aspects associated with problem identification and resolution since the previous corrective actions only addressed the symptoms of the adverse condition, not the root cause. The licensee entered this finding into their corrective action program as CR-CNS-2005-02732.

Inspection Report# : [2005003\(pdf\)](#)**G****Significance:** Jun 23, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

**Inadequate Design Review of System Modification**

A self-revealing finding was identified involving the failure to perform an adequate design change for the reactor feed system startup flow control valves. The inadequate design change failed to ensure component temperature ratings were not exceeded, which would adversely affect valve operation. Specifically, the licensee's evaluation failed to recognize and address acceptable O-ring types for the temperatures of the reactor feed system.

This finding is greater than minor because it affected the cornerstone attribute of design control. It was determined to have very low safety significance in a Phase 3 evaluation. This finding has crosscutting aspects associated with human performance based on the fact that engineering did not follow appropriate guidance in evaluating system environmental conditions related to installing the modification. The licensee entered this finding into their corrective action program as CR-CNS-2004-06997.

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

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## Barrier Integrity

**G****Significance:** Jun 23, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Reactor Operation in Excess of Licensed Thermal Power Limits**

A noncited violation of License Condition 2.C(1) occurred when operators allowed reactor power to exceed the licensed power limit of 2381 MW for 7 hours during a xenon transient on April 10, 2005. Reactor power slowly increased above 2381 MW during the transient; however, operators were controlling the reactor using the eight hour power average which remained below 2381 MW for approximately 7 hours. Reactor power remained below 102 percent during the entire transient; therefore, the reactor was not operated outside its design limits.

This finding was more than minor since it affected the cornerstone attribute of maintaining functionality of the fuel cladding. Based on the Significance Determination Process Phase 1 screening, this finding was determined to have very low safety significance since it only involved the potential to affect the fuel barrier. This finding also had crosscutting aspects associated with human performance and problem identification and resolution since the cause of this event was the erroneous belief by the reactor operator that the reactor could be operated above licensed thermal power as long as the 8-hour average remained below the licensed limit. This aspect of the event was not addressed in the licensee's apparent cause. The licensee entered this finding into their corrective action program as CR-CNS-2005-02869.

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

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## Emergency Preparedness

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## Occupational Radiation Safety

**G****Significance:** Aug 25, 2005

Identified By: NRC



Item Type: NCV NonCited Violation

**Two examples of a failure to conspicuously post a high radiation area.**

The inspector identified two examples of a non-cited violation of Technical Specification 5.7.1 because the licensee failed to conspicuously post two high radiation areas. On August 24, 2005, the inspector identified that a high radiation area in the lab drain tank room and one in the spent resin tank room on the 877-foot elevation of the radwaste building were not conspicuously posted to alert workers of the radiation hazards and aid them in avoiding or minimizing their exposure. General area dose rates were as high as 300 millirem per hour.

The failure to conspicuously post high radiation areas is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Program and Process and affected the cornerstone objective because it decreased awareness of radiological hazards. The finding involved the potential for unintended or unplanned doses from actions contrary to NRC regulations and was processed through the Occupational Radiation Safety Significance Determination Process. The finding was determined to be of very low safety significance because the finding was not associated with ALARA planning or work controls, there was no overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. The finding was entered into the licensee's corrective action program as CR-CNS-2005-06223.

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

**G**

**Significance:** Aug 25, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to follow Technical Specification 5.4.1a procedures for moving irradiated items in the spent fuel pool.**

The inspector reviewed a self-revealing non-cited violation of Technical Specification 5.4.1a because the licensee failed to follow procedures while moving an irradiated control rod blade in the spent fuel pool. Specifically, on June 29, 2005, a contract worker lifted a control rod blade to approximately two feet from the surface of the water at which time the worker's electronic dosimeter alarmed. The licensee failed to monitor radiation levels while lifting the control rod blade as required by their procedures. In addition, the licensee failed to ensure that a mechanical stop was positioned such that the control rod blade remained six feet under water. The licensee's immediate corrective action was to place the control rod blade in a safe condition, exit the spent fuel pool area, and begin an investigation into the incident.

The failure to follow procedures while moving an irradiated control rod blade is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Program and Process and affected the cornerstone objective because the failure to follow procedures resulted in increased personnel exposure. The finding involved a workers's unplanned or unintended exposure to radiation from actions contrary to licensee procedures and was processed through the Occupational Radiation Safety Significance Determination Process. The finding was determined to be of very low safety significance because the finding was not associated with ALARA planning or work controls, there was no overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. In addition, this finding has cross-cutting aspects associated with human performance because the worker's actions directly contributed to the finding. The finding was entered into the licensee's corrective action program as CR-CNS-2005004700.

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

**G**

**Significance:** Jun 23, 2005

Identified By: NRC

Item Type: FIN Finding

**Failure to Plan and Control Dose or Provide ALARA Committee Oversight for Radiation Work Permit 2005-1072**

The inspector identified a finding because the licensee failed to plan and control dose or provide ALARA Committee oversight for the work activity that accrued the largest portion of the refueling outage dose. The drywell general access and limited maintenance special work permit accrued nearly 38 person-rem, but had no dose estimate, work plan, or ALARA committee review.

This finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (ALARA planning/estimated dose) and affected the associated cornerstone objective in that the failure to plan and control radiation dose affected the licensee's ability to ensure adequate protection of worker health and safety. In this case, the licensee formulated no dose estimate. Manual Chapter 0308, Appendix C, states, "Planned or intended collective dose can be the results of a realistic dose estimate (or projection) established during ALARA planning or the dose expected by the licensee (i.e., historically achievable) for the reasonable exposure control measures specified in ALARA procedures/planning." Since the licensee had no expectation of the potential dose, the inspector compared the actual dose with historical doses and found that the 2005 doses exceeded the historical totals by more than 50 percent. When processed through the Occupational Radiation Safety Significance Determination Process, this ALARA finding was found to have no more than very low safety significance because the finding was related to ALARA, but the licensee's 3-year rolling average collective dose was not greater than 240 person-rem. The finding was documented in the licensee's corrective action program as CR-CNS-2005-2985.

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

**G**

**Significance:** Jun 23, 2005

Identified By: NRC

Item Type: FIN Finding

**Failure to Maintain Collective Doses Associated with Radiological Job Package 2005AL-03 ALARA**

The inspector identified a finding because inadequate planning resulted in the collective dose of a work activity that exceeded 5 person-rem and exceeded the dose estimate by more than 50 percent. Radiological Job Package 2005AL-03, Sludge Removal from the Torus, was projected to

accrue 3.2 person-rem, but actually accrued approximately 5.7 person-rem because inadequate planning necessitated additional, unplanned handling of radioactive filters.

This finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (ALARA planning/estimated dose) and affected the associated cornerstone objective in that the failure to control collective dose affected the licensee's ability to ensure adequate protection of the worker health and safety from exposure to radiation. When processed through the Occupational Radiation Safety Significance Determination Process, this ALARA finding was of very low safety significance because the finding was related to ALARA, but the licensee's 3-year rolling average collective dose was not greater than 240 person-rem. The finding was documented in the licensee's corrective action program as CR-CNS-2005-2969.

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

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## Public Radiation Safety

**Significance:**  Jun 10, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### Failure to Correctly Ship Radioactive Material

The team reviewed a self-revealing non-cited violation of 10 CFR 30.41(b)(5) because the licensee failed to correctly ship byproduct material. Specifically, on July 8, 2005, the licensee was notified by Chem-Nuclear, LLC, of the Barnwell Waste Management Facility (Barnwell) that the licensee's radioactive waste shipment (05-10) contained loose radioactive material in the Type B shipping cask, which is prohibited by the Barnwell license.

The failure to correctly ship radioactive material is a performance deficiency. The finding is greater than minor because it was associated with the Public Radiation Safety cornerstone attribute of Transportation Packaging, and it affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials. This finding was processed through the Public Radiation Safety Significance Determination Process because the finding involved an occurrence in the licensee's radioactive material transportation program that is contrary to NRC regulations. The finding was determined to be of very low safety significance (Green) because: (1) it is a finding in the transportation program, (2) there were no radiation dose limits exceeded, (3) there was no breach of package during transportation, (4) it was not a Certificate of Compliance finding, (5) it was a low level waste burial Ground Nonconformance; however, (6) access was not denied and (7) the waste was not underclassified. The finding was entered into the licensee's corrective action program as CR-CNS-2005-04886.

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

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## Physical Protection

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

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## Miscellaneous

**Significance:** N/A Sep 08, 2005

Identified By: NRC

Item Type: FIN Finding

### Problem Identification and Resolution (PI&R) Inspection Team's Assessment of Licensee's PI&R Program

The team reviewed approximately 310 condition reports, notifications, root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. In general, performance had improved since the closure of the Confirmatory Action Letter and when compared to the previous problem identification and resolution assessment. Notwithstanding the improvements, poor problem evaluations and ineffective corrective actions continued to result in a significant number of self-disclosing and NRC identified violations and findings. Further, the licensee has not fully addressed the historical failure to incorporate important vendor information into maintenance documents, which has subsequently caused equipment failures and plant fires. In most cases, however, the corrective action program processes and procedures were generally effective; thresholds for identifying issues were appropriately low and corrective actions were adequate to address conditions adverse to quality.

Based on the interviews conducted, the team concluded that a positive safety conscious work environment exists at the Cooper Nuclear 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 confusion surrounding the use of a dual entry system for condition reporting. 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 : May 25, 2006