UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

August 3, 2008

Stewart B. Minahan, Vice
President-Nuclear and CNO
Nebraska Public Power District
72676 648A Avenue
Brownville, NE 68321

Subject: COOPER NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000298/2009003

Dear Mr. Minahan:

On June 23, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on July 9, 2009, with Mr. D. Willis, General Manager of Plant Operations, and other members of your staff.

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

This report documents one NRC-identified and two self-revealing findings of very low safety significance (Green). All three of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at Cooper Nuclear Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at Cooper Nuclear Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

Sincerely,

/RA/

Geoffrey B. Miller, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DPR-46

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w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000298
License:	DPR-46
Report:	05000298/2009003
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	72676 648A Avenue Brownville, NE 68321
Dates:	March 25 through June 23, 2009
Inspectors:	J. Adams, Ph.D., Reactor Inspector M. Bloodgood, Reactor Inspector M. Chambers, Resident Inspector P. Elkmann, Senior Inspector R. Kopriva, Senior Reactor Inspector D. Reinert, Reactor Inspector N. Taylor, Senior Resident Inspector
Approved By:	Geoffrey B. Miller, Chief, Project Branch C Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000298/2009003: 03/25/2009-06/23/2009; Cooper Nuclear Station, Integrated Resident and Regional Report; Maintenance Effectiveness, Operability Evaluations, and Other Activities.

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

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing noncited violation of Technical Specification 5.4.1.a was reviewed when the licensee failed to follow the requirements of Administrative Procedure 0.9, "Tagout." This procedure violation resulted in an inadequate tagout for the station safety-related service water system and a subsequent partial draindown of the turbine equipment cooling system, causing receipt of the turbine equipment cooling surge tank low level alarm. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2009-00232.

  This finding is more than minor because it could reasonably be viewed as a precursor to a more significant event in that a sustained loss of turbine equipment cooling would result in a reactor scram. Using Manual Chapter 0609.04, "Phase 1-Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. Additionally, the cause of the finding was related to the human performance crosscutting component of work practices because the tagout originator and verifier failed to use adequate self and peer checking error prevention techniques when generating the tagout [H.4(a)] (Section 4OA5).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green noncited violation of 10 CFR 50.65(a)(2) for the failure by the licensee to demonstrate that the Train A diesel generator fuel oil transfer system performance was being effectively controlled through preventive maintenance and not placing the system in a(1) status. The licensee maintained the function in a Maintenance Rule a(2) status despite the fact that the function had exceeded its performance criteria and that the functional failures were maintenance preventable. The licensee entered this issue in their corrective action program as Condition Report CR-CNS-2009-04895.

The finding was more than minor because it involved degraded safety system performance which, if left uncorrected, could become a more significant safety concern. The inspectors determined that this performance deficiency was an additional, but separate consequence of the degraded performance of the diesel generator fuel oil transfer system. Following the guidance of Inspection Procedure 71111.12, this issue was determined to be a maintenance rule Category II finding and is of very low safety significance. The cause of this finding is related to the human performance crosscutting component of decision making in that engineering personnel failed to use conservative assumptions in the decision to characterize the October 30, 2008 failure of diesel generator 1 as not being maintenance preventable [H.1(b)] (Section 1R12).

- Green. A self-revealing noncited violation of very low safety significance (Green) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was reviewed involving the licensee's failure to develop an adequate procedure for freeze protection of the condensate storage tank vent and overflow paths. Specifically, the licensee failed to ensure that the high efficiency particulate air vent filter and the overflow catch barrel were protected from severe freezing weather conditions which led to an overpressure condition of the condensate storage tank on February 3, 2009. The licensee documented the condensate storage tank vent paths freezing in Condition Report CR-CNS-2009-05246.

  The finding is more than minor because the inadequate freeze protection procedure had the potential to lead to a more significant safety concern if left uncorrected. Frozen condensate storage tank vents would prevent its use as an alternate emergency core cooling systems suction source when shutdown. This finding affects the Mitigating Systems Cornerstone attribute of procedure quality and adversely affected the 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 Phase 1 screening worksheet, the inspectors determined that the finding had very low safety significance because it did not result in the loss of any system safety function. The finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee did not thoroughly evaluate condensate storage Tank A vent icing concerns in 2007 resulting in icing of the tank vent paths during severe cold winter conditions [P.1(c)] (Section 1R15).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Cooper Nuclear Station began the inspection period at full power on March 25, 2009, and remained at full power through the end of the inspection period on June 23, 2009.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Summer Readiness for Offsite and Alternate-ac Power

a. Inspection Scope

The inspectors performed a review of the licensee's preparations for summer weather for selected systems, including conditions that could lead to loss-of-offsite power and conditions that could result from high temperatures. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator and the plant to verify that the appropriate information was being exchanged when issues arose that could affect the offsite power system. Examples of aspects considered in the inspectors' review included:

- The coordination between the transmission system operator and the plant during off-normal or emergency events
- The explanations for the events
- The estimates of when the offsite power system would be returned to a normal state
- The notifications from the transmission system operator to the plant when the offsite power system was returned to normal

During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following:

- June 15, 2009, Review summer readiness for offsite and alternate-ac power

These activities constitute completion of one readiness for summer weather affect on offsite and alternate ac power sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of the licensee's adverse weather procedures for seasonal extremes (e.g., extreme high temperatures, extreme low temperatures, or hurricane season preparations). The inspectors: verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes; and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions.

During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- Emergency diesel generators

These activities constitute completion of one readiness for seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

.3 Readiness to Cope with External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

Partial Walkdown

a. Inspection Scope

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

- May 5, 2009, Service water, Division 2
- May 11, 2009, Reactor core isolation cooling system
- May 27, 2009, Residual heat removal Division 2 during reactor core isolation cooling unavailability
- June 10, 2009, Diesel Generator 1 and diesel lubricating oil system during Diesel Generator 2 yellow risk work window week of June 8, 2009

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

These activities constitute completion of four partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Inspection Tours

a. Inspection Scope

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

- April 30, 2009, Standby liquid control area, Zone 5A
- April 30, 2009, Cable expansion area, Zone 9B
- May 11, 2009, Reactor core isolation cooling quad, Zone 1A
- May 27, 2009, Southwest quad, Zone 1D and 1E

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

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On June 11, 2009, the inspectors observed licensed operator requalification training with Crew B in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- April 27, 2009, Division 1 power to circulating water, service water and diesel generator
- June 9, 2009, Degraded performance of Relay EE-REL-27X15/1G

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

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

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

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

b. <u>Findings</u>

<u>Introduction</u>. The inspectors identified a Green noncited violation of 10 CFR 50.65(a)(2) involving a failure to demonstrate that the Train A diesel generator fuel oil transfer system performance was being effectively controlled through preventative maintenance and not placing the system in a(1) status. The licensee maintained the function in a Maintenance Rule a(2) status despite the fact that the function had exceeded its performance criteria and that the functional failures were maintenance preventable.

<u>Description</u>. The licensee’s 10 CFR 50.65 Maintenance Rule program defines several diesel generator fuel oil system functions for the Maintenance Rule. Function DGDO-PF01A is described as “store and transfer clean fuel oil for use by the emergency diesel generator Train A.” This function tracks the success of the fuel oil transfer system in moving fuel from the onsite fuel oil storage tanks to the fuel oil day tank in the diesel generator room. In accordance with 10 CFR 50.65(a)(2), licensee

personnel established performance criteria to demonstrate that the performance of the function was being effectively controlled through the performance of appropriate preventive maintenance. One of those criteria is that the fuel oil transfer system will not exceed one functional failure in an 18-month period.

On September 11, 2007, diesel Generator 1 experienced excessive leakage into its fuel oil day tank during maintenance activities on diesel Generator 2. The cause of the leakage was determined to be the failure of the diesel Generator 1 fuel oil day tank inlet float Valve DGDO-FLTV-10 which made the diesel generator inoperable. Valve DGDO-FLTV-10 had been replaced on August 27, 2007 in Preventive Maintenance Order 4514813. The valve failed in service because it was errantly procured with elastomers designed for water applications versus fuel oil applications. This procurement error was a result of the licensee's purchase order not specifying the required oil-compatible replacement part. This failure was evaluated to be a maintenance preventable functional failure on October 3, 2007.

On October 30, 2008, during a surveillance test, a failure of diesel generator 1 was caused by debris blockage in Valve DGDO-FLTV-10. The source of the debris was determined to be a failed gasket on the inlet side of flow Transmitter DGDO-FI-DT1 for diesel Generator 1, which was replaced in Preventive Maintenance Order 4600486 on August 27, 2008. Licensee personnel had procured the replacement flow indicator and gaskets as nonessential, and as such performed no meaningful receipt inspection. As a result, licensee personnel did not detect that the vendor delivered an incompatible gasket with the new flow transmitter. The gasket subsequently failed in service, causing the float valve blockage and diesel generator failure on October 30, 2008. The licensee determined that this failure did not represent a functional failure due to their position that the procurement error was the fault of the vendor for not supplying the appropriate gasket material. In NRC Inspection Report 05000298/2009002, the inspectors identified a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure the flow transmitter and associated parts were suitable for their intended application. Had the parts been procured for this maintenance activity in a way that ensured their suitability for the fuel oil environment, the diesel generator failure would have been avoided. The inspectors therefore determined that the October 30, 2008 failure should have been counted as a maintenance preventable functional failure against Function DGDO-PF01A.

With two maintenance preventable functional failures within an 18-month period, Administrative Procedure 0.27, "Maintenance Rule Program," should have led licensee personnel to complete a 10 CFR 50.65(a)(1) evaluation to determine if the performance of the system was being effectively controlled through the performance of appropriate preventive maintenance and if goals and monitoring criteria should be established in accordance with 10 CFR 50.65(a)(1). In the months following the failure, no such evaluation was performed. As a result, the inspectors performed a review of the two functional failures and determined that both stemmed from inadequate procurement practices. Given that procurement practices are integral to the performance of quality maintenance on safety-related systems, the inspectors determined that both of these failures were maintenance-preventable and that Function DGDO-PF01A should have been placed in (a)(1) status after the October 30, 2008, failure of diesel Generator 1.

The inspectors determined that the cause of this performance deficiency was the failure by engineering personnel to take a conservative approach to the maintenance rule treatment of the failures affecting Function DGDO-PF01A. Had engineering personnel taken a self-critical look at the procurement strategy used for flow Transmitter DGDO-FI-DT1, they would have identified the February 2008 procurement of parts for the maintenance activity as an opportunity to identify the incorrect quality class of the flow transmitter and associated elastomers. This would have led to the determination that the October 30, 2008, failure of diesel Generator 1 had been a maintenance preventable functional failure, and an evaluation would have ensued to determine that Function DGDO-PF01A should have been placed in 10 CFR 50.65(a)(1) status.

Analysis. The inspectors determined that the failure by licensee personnel to effectively monitor the performance of the diesel generator fuel oil transfer system in accordance with 10 CFR 50.65(a)(2) was a performance deficiency. The finding was more than minor because it involved degraded safety system performance which, if left uncorrected, could become a more significant safety concern. The inspectors determined that this performance deficiency was an additional, but separate consequence of the degraded performance of the diesel generator fuel oil transfer system. Following the guidance of Inspection Procedure 71111.12, this issue was determined to be a maintenance rule Category II finding and is of very low safety significance. The cause of this finding was related to the human performance crosscutting component of decision making in that engineering personnel failed to use conservative assumptions in the decision to characterize the October 30, 2008 failure of diesel Generator 1 as not being maintenance preventable [H.1(b)].

Enforcement. Title 10 CFR 50.65 (a)(1) requires, in part, that holders of an operating license shall monitor the performance or condition of structures, systems and components within the scope of the rule as defined by 10 CFR 50.65 (b), against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components are capable of fulfilling their intended safety functions. Title 10 CFR 50.65 (a)(2) states, in part, that monitoring as specified in 10 CFR 50.65 (a)(1) is not required where it has been demonstrated that the performance or condition of structures, systems, and components are being effectively controlled through the performance of appropriate preventive maintenance, such that the structures, systems, and components remain capable of performing their intended functions. Contrary to the above, as of October 30, 2008, the licensee failed to demonstrate that the performance of the emergency diesel Generator 1 fuel oil transfer system had been effectively controlled through the performance of appropriate preventive maintenance and did not monitor against licensee-established goals. Specifically, the licensee failed to identify and properly account for two maintenance preventable functional failures of the diesel generator fuel oil transfer function occurring from September 11, 2007 to October 30, 2008, which demonstrated that the performance or condition of these structures, systems and components were not being effectively controlled through the performance of appropriate preventive maintenance and, as a result, that goal setting and monitoring was required. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2009-04895, this violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000298/2009003-01, "Failure to Adequately Monitor the Performance of the Diesel Generator Fuel Oil Transfer System."

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

a. Inspection Scope

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

- May 15, 2009, Startup transformer outage
- May 27, 2009, Yellow window during reactor core isolation cooling unavailability
- June 9, 2009, Relay 27X15/1G replacement required orange risk window
- June 11, 2009, Diesel Generator 2 work window week of June 8

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

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

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- April 20, 2009, Degraded performance of Relay EE-REL-27X15/1G

- April 24, 2009, Concrete leaching in reactor building structures

- May 27, 2009, Diesel Generator 1 lube oil leak

- May 29, 2009, Control room emergency filtration system operability following repairs

- June 4, 2009, Condensate storage tank operability with frozen vents

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Updated Final Safety Analysis Report to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five operability evaluation inspection samples as defined in Inspection Procedure 71111.15-05

b. Findings

Introduction. A self-revealing noncited violation of very low safety significance (Green) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was reviewed involving the licensee's failure to develop an adequate procedure for freeze protection of the condensate storage tank vent and overflow paths. Specifically, the licensee failed to ensure that the high efficiency particulate air vent filter and the overflow catch barrel were heat traced which led to an overpressure condition of the condensate storage tank on February 3, 2009.

Description. On February 3, 2009, the radwaste control room operator started transferring water to condensate storage Tank A and 8 minutes later the Tank A HI/LOW level alarm annunciated in the control room. At time of the alarm, a loud noise was heard coincident with the tank gauge port cover popping open. This condition was caused when the condensate tank became pressurized due to the two vent paths, the vent filter, and the overflow piping being frozen shut.

The condensate storage Tank A is a 450,000-gallon tank which is vented to atmosphere. It is equipped with three electric heaters that maintain the internal water temperature greater than 40° F. There is a high efficiency particulate filter vent filter attached to the top of the tank and an overflow line to the ground next to the tank. The overflow line is directed into a catch barrel that collects condensation from the overflow piping to prevent unmonitored liquid radioactive release concerns. The catch barrel also has level indication by a rubber tubing sight glass on the side of the barrel.

During normal operations, the water vapor in the tank condenses in the vent filter and the overflow line. The condensed water vapor from the overflow pipe is normally drained into the catch barrel where it is monitored by weekly operator checks. When the catch barrel sight glass level gets one-half full operators pump the water out. During extremely cold winter weather in February 2009, the water vapor in the vent filter froze and blocked the vent path through the top of the tank. Additionally, the sight glass level indication on the overflow barrel froze, providing a false low level indication of the barrel. The actual water level rose in the barrel into the overflow pipe and froze, plugging the pipe.

The tank cover has a gauge port that can be used to manually check the tank level. Remote level indication is provided by a Rosemount level transmitter that works by the differential pressure from the tank level column compared to atmospheric pressure. Review of the tank level recorder following the events showed a pressure spike both at 1:40 a.m. and 9:23 a.m. on February 3, 2009, during two condensate storage tank filling evolutions under severe cold winter weather conditions. The spikes were caused by excess pressure in the tank giving a false high level indication. The licensee found the gage port had popped open during the 9 a.m. tank fill. The overflow pipe and catch barrel were thawed out and the vent filter changed prior to closing the gauge port. No degradation was identified on the external structural members of the tank. The licensee provided guidance on directly monitoring barrel level and informed personnel to ensure they understood the expectations of monitoring the barrel level directly through the bung holes during freezing weather conditions.

The inspectors reviewed Condition Report CR-CNS-2007-07572 that documents a 2007 NRC component design basis inspection question on why the condensate storage Tank B vent is heat traced when the condensate storage Tank A vent is not. The report states that at the time condensate storage Tank A was installed during original plant construction, industry standards did not require heat tracing as a requirement for the vent. When condensate storage Tank B was installed, the industry standards had been revised requiring the vent to be heat traced. The report also evaluated the adequacy of not having Tank A vent heated and determined based on the area of the vent and no documented evidence of vent blocking with ice, that heating the vent was not necessary. The conclusion was that, “Due to the existing configuration of the top vent it has been determined that it is not possible to block all four sides of the vent with ice blockage.” Another Condition Report, CR-CNS-2007-07571, answering the component design bases inspection team’s question about whether the catch barrel installed on the overflow pipe was an unauthorized modification discussed the concern that, if the tank top vent were to become blocked due to icing, the only remaining vent would be the overflow, then blocked by the catch barrel. The evaluations of these condition reports were not thorough and therefore did not propose appropriate corrective actions to address this safety issue in a timely manner commensurate with its safety significance.

The inspectors reviewed General Operating Procedure 2.1.14, “Seasonal Weather Preparations,” Revision 13, and determined that while there were instructions to ensure the condensate storage tank heaters were on, there were no other cold weather preparations required. Therefore, the inspectors concluded that Procedure 2.1.14 was inadequate to protect the condensate storage Tank A vent paths from freezing. The inspectors noted that Procedure 2.1.14 is a “QAPD Related” procedure, and as such is an extension of the licensee’s Quality Assurance Policy Document and therefore subject to the quality standards of 10 CFR Part 50, Appendix B, “Quality Assurance.”

The inspectors noted that the condensate storage tank serves as a potential source of water for the suction of the emergency core cooling system pumps during shutdown operations. Emergency Procedure 5.8, Attachment 1, “RPV Control,” Revision 14, lists this strategy as one of several injection sources that should be used by operators to mitigate a loss of reactor vessel inventory. Should this suction source have been required for accident response with both the vent paths frozen, a tank failure could have resulted.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to comply with 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings.” Specifically, the licensee failed to provide adequate procedural guidance for the freeze protection of condensate storage Tank A leading to freezing and loss of vent paths to the tank. The finding was more than minor because the inadequate freeze protection procedure had the potential to lead to a more significant safety concern if left uncorrected. Frozen condensate storage tank vents would prevent its use as an alternate emergency core cooling systems suction source when shutdown. This finding affected the Mitigating Systems Cornerstone attribute of procedure quality and adversely affected the 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, “Phase 1 Screening Worksheet,” the inspectors determined that the finding had very low safety significance because it did not result in the loss of any system safety function. The finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee did not thoroughly evaluate the condensate storage Tank A vent icing concerns in 2007 resulting in icing of the tank vent paths during severe cold winter conditions [P.1(c)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires in part, that activities affecting quality be prescribed and accomplished using instructions, procedures, or drawings appropriate to the circumstances and include appropriate acceptance criteria. Contrary to the above, during the winter of 2008 until February 3, 2009, the licensee failed to provide a procedure appropriate to the circumstances to verify operation of condensate storage Tank A vents in freezing weather. As a result, condensate storage Tank A vent paths were frozen and the tank would have been unable to perform its quality related function as an alternate emergency core cooling system suction source if the plant had been shutdown. Specifically, Procedure 2.1.14, “Seasonal Weather Preparations,” had no instructions to protect the condensate storage Tank A vents from freezing weather conditions and preserve the quality related function of venting the tank. Because this issue was of very low safety significance (Green) and the licensee has entered this issue into their corrective action program in Condition Report CR-CNS-2009-05246, this violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000298/200903-02, "Inadequate Freeze Protection Procedure Results in Loss of Condensate Storage Tank Vent Path."

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee’s implementation of evaluations performed in accordance with 10 CFR 50.59, “Changes, Tests, and Experiments,” and changes, tests, experiments, or methodology changes that the licensee determined did not require 10 CFR 50.59 evaluations. The inspection procedure requires the review of 6-12 licensee evaluations required by

10 CFR 50.59, 12-25 changes, tests, or experiments that were screened out by the licensee and 5-15 permanent plant modifications.

The inspectors reviewed seven evaluations required by 10 CFR 50.59. These included:

- CED 6013140, “Service Air Compressor Replacement,” Change Notice 12
- CED 6016559, “DEH System Replacement 2008-014,” Revision 0
- EE 08-014, “Control Rod Blade Drop 2008-007,” Revision 0
- EE 08-026, “Re-configure DGDO-V-19 from Open to Close,” Revision 0
- CED-6020580, “DEH Controls Jumper to Prevent Unwarranted Mode Change - 50.59 Evaluation # 2006-003,” Revision 0
- CED 6025820, “Service Water Booster Pump Interlock Removal – 50.59 Evaluation # 2007-004,” Revision 0
- SP06-001, “Operational Testing Reactor Vessel Level and Reactor Feed Pump Turbines A and B Control Systems,” Revision 4

The inspectors reviewed 15 changes, tests, and experiments that were screened out by licensee personnel. These included:

- 50.59 Screening #18, “USAR Change for Accumulator Testing,” Revision 0
- EE 04-072,” Paint Chips as a Drywell Debris Source onto ECCS Suction Strainers,” Revision 3
- EE 06-014, “Design Basis Stroke Time Requirements for various Power Operated Valves,” Revision 0
- EE 06-033, “Revision of NEDC 95-003: Packing Friction Update,” Revision 0
- EE 06-037, “Calculation Revision for NEDC 97-014 and NEDC 97-015,” Revision 0
- EE 07-001, “Measurement Uncertainty Recapture Power Uprate,” Revision 1
- EE 07-017, “Reactor Core Isolation Cooling and Core Spray Response to an Appendix R Event,” Revision 0
- EE 08-032, “Revision of NEDC 95-003 and NEDC 00-110 to incorporate RE24 Data,” Revision 0
- EE 09-004, “Change Classification of RW-V-255,” Revision 1
- EE 09-009, “Reclassify Control Rod Drive Accumulator Pressure Switches CNS-0-CRD-PS-130 XX-XX,” Revision 0

- PCR 15.HV.107, “Essential Control Building HVAC Division 1 Fan Capacity Test,” Revision 3

- PCR 15.HV.108, “Essential Control Building HVAC Division 2 Fan Capacity Test,” Revision 3

- TCC 4599002, “Install Gag on Relief Valve RF-RV-28RV,” dated November 18, 2007

- TCC 4658473, “Install Gag on Relief Valve RF-RV-27RV,” dated October 8, 2008

- TCC 4665414, “DG1 Float Valve CNS-1-DGDO-FOV-FLTV-10 Soft Seat Removal,” dated December 16, 2008

The inspectors reviewed six permanent plant modifications. These included:

- CED 6017681, “Drywell Permanent Shielding,” dated March 28, 2008

- CED 6018461, “Agastat TDR Solid State Upgrades,” Revision 2

- CED 6023681, “Leading Edge Flow Meter System - Feedwater Flow Measurement,” Revision 1

- CED 6029280, “Modification of Main Steam Pipe Support MS-H74A During MCO 09-01,” Revision 0

- CED 6029681, “Modification of Engine Driven Lube Oil Pump (EDLO) 1 & 2 Discharge Piping,” Revision 1

- EE 06-037, “Calculation Revision for NEDC 97-014 and NEDC 97-015,” Revision 0

The inspectors verified that when changes, tests, or experiments were made, that evaluations were performed in accordance with 10 CFR 50.59 and that licensee personnel had appropriately concluded that the change, test or experiment can be accomplished without obtaining a license amendment. The inspectors also verified that safety issues related to the changes, tests, or experiments were resolved. The inspectors reviewed changes, tests, and experiments that licensee personnel determined did not require evaluations and verified that the licensee personnel’s conclusions were correct and consistent with 10 CFR 50.59. The inspectors also verified that procedures, design, and licensing basis documentation used to support the changes were accurate after the changes had been made.

During the portion of the inspection dealing with modifications, the inspectors verified that supporting design and license basis documentation had been updated accordingly and was still consistent with the new design. The inspectors verified that procedures, training plans, and other design basis features had been adequately accounted for and updated. Specific documents reviewed during this inspection are listed in the attachment.

The inspectors verified that the licensee was identifying permanent plant modification issues and problems related to 10 CFR 50.59 applicability determinations, screenings and evaluations, and had entered them in the corrective action program. The inspectors selected several samples to evaluate the appropriateness of the corrective actions program. No program concerns were identified with corrective action documents reviewed.

These activities constitute completion of one sample as defined in Inspection Procedure 71111.17-05

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

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

- May 15, 2009, Station startup service transformer
- June 1, 2009, Reactor core isolation cooling
- June 9, 2009, Relay 27X15/1G replacement
- June 9, 2009, Valves RHR-CV-18CV and RHR-CV-19CV replacement
- June 17, 2009, Diesel Generator 2 motor-operated potentiometer replacement
- June 17, 2009, Diesel Generator 2 engine-driven lube oil pump discharge piping replacement

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

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

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

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

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

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

- Annunciators and alarm setpoints

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

- May 28, 2009, Reactor coolant dose equivalent Iodine-131 specific activity sample

- June 9, 2009, In-service test of residual heat removal Pump B and Pump D

- June 9, 2009, In-service test of residual heat removal Division 2 valves

- June 12, 2009, Diesel Generator 2 surveillance test

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

These activities constitute completion of four surveillance testing inspection samples (one routine and three inservice tests) as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

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

.1 Emergency Plan Implementing Procedure Review

a. Inspection Scope

The inspectors performed an in-office review of Cooper Nuclear Station emergency plan implementing Procedure EPIP 5.7.1, "Emergency Classification," Revision 39, received April 10, 2009. This revision added Notification of Unusual Event Emergency Action Level 8.1.5, "Damage to a loaded dry storage cask confinement boundary," and updated the current revision of the classification Hard Card (emergency plan implementing Procedure 5.7.1, Attachment 4).

This revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings of significance were identified.

.2 Emergency Plan Review

a. Inspection Scope

The inspectors performed an in-office review of Revision 56 to the Cooper Nuclear Station Emergency Plan. This revision added Emergency Action Level 8.1.5 (Damage to a loaded dry storage cask confinement boundary) at the Notification of Unusual Event classification, replaced references to a specific telecommunications provider with more generic references to a local telephone service provider, removed a table reference to a sound-powered telephone in one emergency response facility, clarified the role of the Station Operations Review Committee in approving changes to the site emergency plan, updated the expiration dates of several Letters of Agreement with offsite response organizations to reflect the renewal of agreements for offsite support, revised the titles of some plant emergency response positions, updated references to the National Response Framework, and corrected minor spelling and punctuation errors.

This revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b), to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on June 15, 2009, which required emergency plan implementation by licensee operations Crew B. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

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

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the first quarter 2009 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

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

b. Findings

No findings of significance were identified.

.2 Safety System Functional Failures (MS05)

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures performance indicator for the period from the second quarter 2008 through the first quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports and NRC integrated inspection reports for the period from March 2008 through March 2009 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one safety system functional failures sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System Specific Activity performance indicator for the period from the second quarter 2008 through the first quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's reactor coolant system chemistry samples, technical specification requirements, issue reports, event reports and NRC integrated inspection reports for the period from March 2008 through March 2009 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system specific activity sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 Reactor Coolant System Leakage (BI02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System Leakage performance indicator for the period from the second quarter 2008 through the first quarter 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator logs, reactor coolant system leakage tracking data, issue reports, event reports, and NRC integrated inspection reports for the period from March 2008 through March 2009 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system leakage sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of January 2009 through June 2009, although some examples expanded beyond those dates where the scope of the trend warranted.

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

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

b. Findings and Observations

There were no findings of significance identified. The inspectors evaluated the licensee's trending methodology and observed that the licensee had performed a detailed review. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in their corrective action program data. The inspectors compared the licensee process results with the results of the inspectors' daily screening and did not identify any discrepancies or potential trends in the corrective action program data that the licensee had failed to identify. The inspectors did, however, identify additional insights into several of these issues as documented below:

Procurement Activities

The inspectors noted that the licensee's April 2009 trend report discussed emerging trends in the areas of parts and material control and procurement. The licensee initiated Condition Report CR-CNS-2009-03977 to evaluate this trend, which was closed to Condition Report CR-CNS-2009-04526 for evaluation. The inspectors reviewed the results of this evaluation, which provided little insight as the cause for the recent trend in procurement challenges. Additionally, the inspectors noted that Quality Assurance Audit 09-04, "Procurement," was completed in April 2009 and evaluated the licensee's procurement program as marginally effective. These results match inspector observations that the procurement and material control processes at the plant are degraded and have led to notable equipment failures, including the surveillance test failure of diesel generator 1 on October 30, 2008.

Safety-Related Battery Cell Cracking

The inspectors reviewed recent condition reports related to battery cell cover cracking and battery electrolyte leakage. Cracking of battery cell covers and small amounts of electrolyte seepage have been identified on 125 Vdc Batteries A and B and 250 Vdc Batteries A and B. Instances of this condition have been identified by NRC inspector observations, routine licensee tours of the battery rooms, and during the performance of battery testing surveillances.

From a review of condition reports written during the previous 2 years, the inspectors determined that cell cover cracking had affected 67 cells in 250 Vdc Battery A, 38 cells in 250 Vdc Battery B, 6 cells in 125 Vdc Battery A, and 14 cells in 125 Vdc Battery B (against a total of 120 cells in each 250 Vdc battery and 60 total cells in each 125 Vdc battery). Figures 1 and 2 depict the historical trend of identified battery cell cracks.

Figure 1: 250 V Battery Cover Cracks: Cumulative Totals

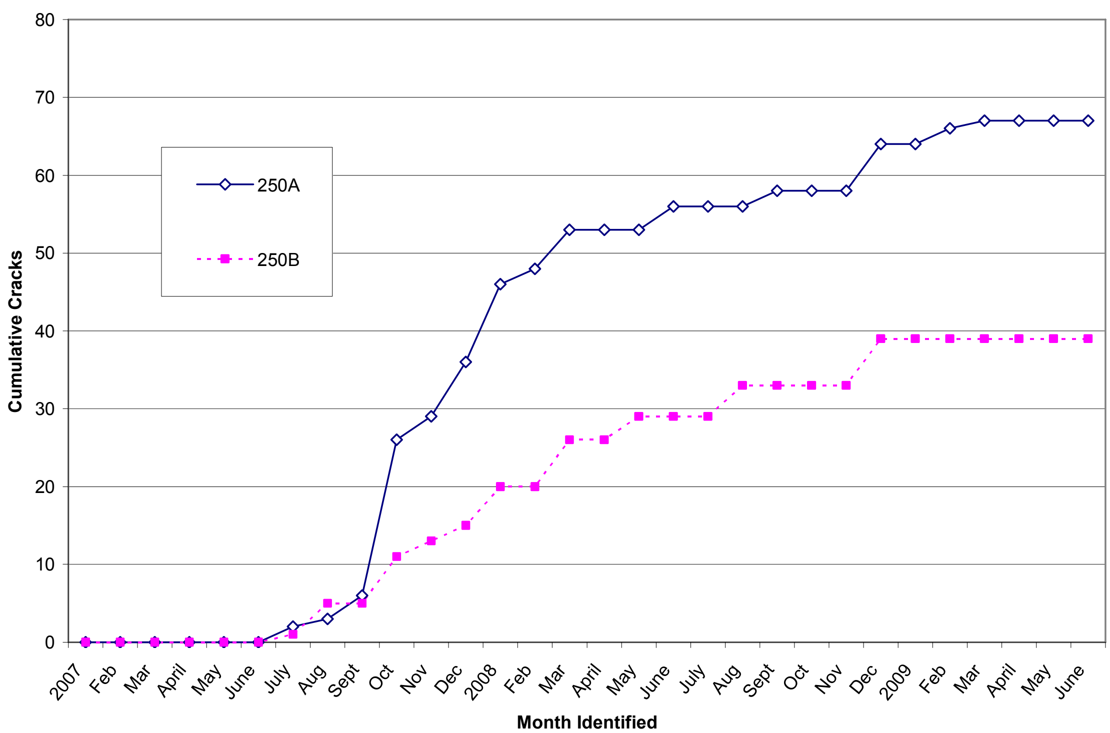
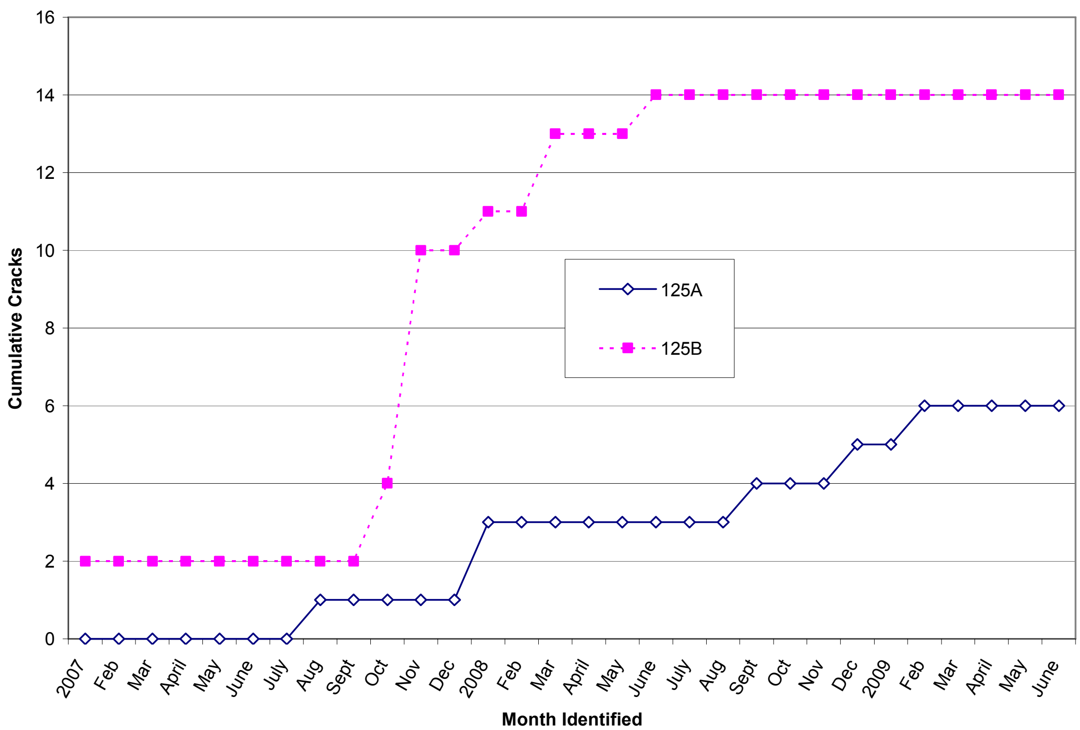


Figure 2: 125 V Battery Cover Cracks: Cumulative Totals



The licensee determined that the battery cell cover cracks do not threaten the safety function of the battery. However, 250 Vdc Batteries A and B have exhibited signs of corrosion on the battery racks and grounding cables. Condition Report CR-CNS-2008-06519 identified the battery cell cover leakage as the source of this corrosion. Continued corrosion of the battery racks will likely degrade the structural strength of the battery racks and threaten their safety function. The inspectors noted that 250 Vdc Battery B is scheduled for replacement during Refueling Outage 25 and 250 Vdc Battery A during Refueling Outage 26. Additionally, the inspectors noted a degrading trend on 125 Vdc Battery B, and that no plans existed to replace this battery. Following discussion of this adverse trend with inspectors, licensee staff concurred that a degrading trend existed and will consider replacement of this battery.

Crosscutting Theme in Human Error Prevention

Recent changes to NRC Inspection Manual Chapter 0305 require NRC inspectors to periodically assess licensee progress in treatment of emerging or existing crosscutting themes. During the 2008 end of cycle assessment, inspectors noted that a crosscutting theme existed at Cooper Nuclear Station in that four inspection findings in 2008 were associated with human error prevention causal factors. In response to this data, the licensee initiated Condition Report CR-CNS-2008-09443 to identify the causes and required corrective actions for these errors. The inspectors reviewed the resulting root cause report which was completed on March 7, 2009, and the proposed corrective actions. In addition, the inspectors interviewed station personnel responsible for implementing these corrective actions and validated completion of the actions through document reviews and personnel interviews.

The inspectors determined that the licensee had completed several significant corrective actions in an attempt to mitigate the emerging trend. Significant actions completed included (1) biweekly tailgate meetings with all employees on human performance fundamentals; (2) increasing required supervisory oversight of high risk activities; (3) implementation of a dynamic learning flow-loop simulator for all personnel to practice error prevention techniques; (4) implementing work scheduling changes to minimize schedule pressure effects; and (5) creation of a human performance review board to periodically review the status of the program. Other actions in progress at the time of the inspection included: (1) implementation of "coach-the-coach" training; and (2) completion of oral boards for all supervisors to verify their knowledge of error prevention strategies.

The inspectors noted that inspection findings with error prevention causal factors continue to be identified. Since the completion of the 2008 end of cycle assessment meeting, two more findings have been documented with this causal factor. These findings included the failure on November 30, 2008 to ensure a boundary door was closed in the control room envelope (documented in NRC Inspection Report 05000298/2009002) and a failure on January 12, 2009 to perform adequate self or peer checking activities for a tagout (see Section 4OA5 of this report). Given that these two human errors occurred before the implementation of the licensee's corrective actions began for the crosscutting theme, the inspectors determined that they did not indicate a weakness in the licensee's improvement plan. The inspectors determined that the licensee's human performance improvement plan contained substantial corrective actions that should serve to reduce the frequency of significant human errors.

.4 Selected Issue for Followup Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the issue listed below for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- CR-CNS-2009-03203, "Movement of Reactor Building Crane Outside Operability Evaluation"

Documents reviewed by the inspectors included:

- CR-CNS-2008-07968
- CR-CNS-2009-02495
- CR-CNS-2009-03203
- CR-CNS-2009-03972

- Training Qualification Document, “Prepare a Change Evaluation Document,” Revision 6

These activities constitute completion of one in-depth problem identification and resolution sample as defined in Inspection Procedure 71152-05.

b. Findings and Observations

No findings of significance were identified during this review. The inspectors reviewed the licensee's treatment of Condition Report CR-CNS-2009-03203, which documented the inappropriate movement of the reactor building crane despite the fact that it had been danger-tagged to preclude its movement following discovery that the crane had been modified without performing the required evaluations. This condition, which had been identified by the licensee's quality assurance staff, was documented when the licensee discovered that a temporary power source had been supplied to the crane. This temporary power source had originally been provided to supply electrical power in support of modifications to the crane. In the root cause investigation, the licensee determined that contractor personnel had inappropriately used the risk release for maintenance process to provide justification for moving the crane for work in the spent fuel pool using the temporary power supply prior to completing the design change evaluation for the modifications to the crane.

The licensee documented two root causes for the event: (1) inadequate management oversight of the project, and (2) a failure to follow procedural requirements for the completion of operability evaluations. The root cause report went on to discuss that the major driver in the improper risk release completion was schedule pressure, which had been applied by senior management in an attempt to maintain full core offload capability, given that the independent spent fuel storage installation project was to be completed in only half of the recommended timeline. The inspectors concluded that the root cause was thorough. The inspectors noted that the licensee’s compressed time schedule for the project, deficient project management and over-reliance on contractor support resulted in a loss of configuration control for the facility.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with Cooper Nuclear Station’s security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors’ normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Inadequate Tagout Results in Draining of Turbine Equipment Cooling System

a. Inspection Scope

The inspectors reviewed documents associated with the entry into Abnormal Procedure 2.4TEC, "TEC Abnormal," that occurred on January 12, 2009. The licensee documented this event with Condition Report CR-CNS-2009-00232. The inspectors reviewed station procedures, control room operating logs, treatment of the issue in the licensee's corrective action program, and the apparent cause report and prescribed corrective actions. This review revealed that a violation of NRC requirements occurred as described below.

b. Findings

Introduction. A self-revealing noncited violation of Technical Specification 5.4.1.a was reviewed when the licensee failed to follow the requirements of Administrative Procedure 0.9, "Tagout." This procedure violation resulted in an inadequate tagout for the station safety-related service water system and a subsequent partial draindown of the turbine equipment cooling system, requiring operators to enter Abnormal Operating Procedure 2.4TEC, "TEC Abnormal," due to the receipt of the turbine equipment cooling surge tank low level alarm.

Description. On January 12, 2009, control room operators received an alarm for turbine equipment cooling surge tank low level. The alarm occurred when local plant operators were performing a system draindown for the purposes of replacing Valve SW-V-119. The control room alarm was confirmed when local plant operators reported the turbine equipment cooling surge tank level was below the bottom of the sight glass. The control room operators then entered Abnormal Procedure 2.4TEC, "TEC Abnormal," Revision 22, and established manual control of the turbine equipment cooling surge tank level per Procedure 2.2.76, "Turbine Equipment Cooling System," Revision 72. Normal level was restored several minutes later.

Clearance Order SW-1-4674290 SW-119 REPAIR was generated in preparation for replacement of Valve SW-V-119. The loss of inventory from the turbine equipment cooling system was caused by an unrecognized cross-connect between the turbine equipment cooling system and the service water system through Valve TEC-V-516. This valve is the control room air conditioner emergency service water return valve and was not identified in the isolation boundary for the tagout.

The purpose of the clearance order process is to control equipment to provide protection for personnel and plant equipment during maintenance, testing, or modification activities. According to Cooper Nuclear Station Administrative Procedure 0.9, "Tagout," the tagout originator is responsible for determining the components to be tagged, the required position of each component and the tagging sequence necessary to cover the planned activity. The tagout verifier is responsible for reviewing the tagged components and tagging sequence to verify that they are adequate for the planned activity.

In interviews conducted by inspectors, both the originator and verifier described that they had incorrectly read the drawings and missed Valve TEC-V-516 as a potential source of water into the work boundary. The tagout originator consulted Drawings 2006 and 2007 and considered Valve TEC-V-516, but the originator discounted this line as a potential water source since the valve symbol indicated that the valve was normally closed. However, on April 19, 2008, the valve's normal position had been changed from closed to open. This change was made due to concerns made by the licensee's engineering staff regarding the component classification of Valve TEC-V-516. Drawing Change Notifications 08-0236 and 08-0237 were submitted to revise the component classification boundaries indicated on Drawings 2006 and 2007, but the valve position symbol for Valve TEC-V-516 was not updated on the controlled drawing. The verifier described that he had missed a potential water source due to lack of attention to detail. The inspectors verified that proper independence was maintained between the originator and verifier as required by Administrative Procedure 0.9. Lastly, the inspectors noted that schedule pressure was a factor, since the tagout was modified the morning of the planned work activity, and the verifier performed this task while distracted by his duties as the on-watch balance of plant operator.

The inspectors reviewed the licensee's apparent cause report document in Condition Report CR-CNS-2009-0232 and its associated corrective actions. The licensee determined that, due to last minute changes to the clearance order and distractions due to other maintenance activities, the tagout originator and verifier failed to reference the turbine equipment cooling valve lineup procedure in preparing the clearance order. The inspectors determined that, although the originator had failed to reference the valve lineup procedure for the valve's position, the bigger issue was that neither the originator nor the verifier identified that Valve TEC-V-516 needed to be in the clearance order boundary, irrespective of the valve's position. The inspectors determined that the failure by the verifier to identify the originator's error was a missed opportunity to correct this performance deficiency prior to the event. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2009-00232.

<u>Analysis</u>. The performance deficiency associated with this finding is the failure to follow procedures to complete tagouts. This performance deficiency could reasonably be viewed as a precursor to a significant event in that a sustained loss of turbine equipment cooling would result in a reactor scram. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. Additionally, the cause of the finding is related to the human performance crosscutting component of work practices because the tagout originator and verifier failed to use adequate self and peer checking error prevention techniques when generating the tagout [H.4(a)].

<u>Enforcement</u>. Cooper Nuclear Station Technical Specification 5.4.1.a, provides, in part, that written procedures shall be established, implemented and maintained for the activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. The NRC Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, "Quality Assurance Program Requirements (Operation)," Section 1.c, requires that equipment control (e.g., locking and tagging) be conducted in accordance with written procedures. Administrative Procedure 0.9, "Tagout," Revision 66, step 7.2.1, states that the tagout originator shall determine components to be tagged, the required position of

each component, and tagging sequence necessary to cover the planned activity. Contrary to this requirement, on January 12, 2009, the licensee's tagout originator failed to identify the need to include Valve TEC-V-516 in the tagout boundary for Clearance Order SW-1-4674290 SW-119 REPAIR. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2009-00232, this violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000298/2009003-03, "Inadequate Tagout Results in Draining of Turbine Equipment Cooling System."

4OA6 Meetings

Exit Meeting Summary

On April 14, 2009, the emergency preparedness inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency action levels to Mr. J. Austin, Manager, Emergency Preparedness. The licensee acknowledged the issues presented.

On May 6, 2009, the emergency preparedness inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan to Mr. J. Austin, Manager, Emergency Planning, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspector confirmed that proprietary, sensitive, or personal information examined during the inspection had been returned to the identified custodian.

On June 12, 2009, the regional inspectors presented the inspection results to Mr. D. Willis, General Manager, Plant Operations, and other members of the licensee staff. The inspectors stated that they had reviewed proprietary information during the inspection, and verified that all material had been returned to the licensee or destroyed. The licensee acknowledged the inspection results as presented.

On July 9, 2009, the regional inspectors presented the inspection results to Mr. D. Willis, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector confirmed that proprietary, sensitive, or personal information examined during the inspection had been returned to the identified custodian.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

R. Alexander, Control Room Supervisor, Operations
J. Austin, Manager, Emergency Preparedness
T. Barker, Procurement Engineering Supervisor, Design Engineering Department
S. Bebb, Document Control Room Supervisor, Administrative Services Department
B. Beilke, Manager, Chemistry
K. Billesback, Manager, Materials, Purchasing, and Contracts
L. Boden, Clerk, Maintenance, Nuclear Support
M. Boyce, Manager, Projects
D. Buman, Manager, System Engineering Department
T. Carson, Manager, Maintenance
B. Chapin, Safety and Human Performance
T. Chapin, Audit Lead, Quality Assurance
K. Chrisp, Control Room Operator, Operations
R. Estrada, Manager, Corrective Action and Assessments
T. Fox-McCloskey, Supervisor, NIS
J. Furr, Manager, Quality Assurance
G. Gardner, NSSS Supervisor, System Engineering Department
D. Goodman, AOM Shift, Operations
J. Horn, Mechanical Supervisor, Design Engineering Department
T. Hottovy, Engineering Support Department Manager, Engineering
J. Kelsey, Senior Emergency Planner
G. Kline, Director, Design Engineering Department
J. Maddox, Mechanical Engineer, Design Engineering Department
D. Madsen, Licensing Engineer, Licensing
J. Neddenriep, Instrument and Controls Engineer, Design Engineering Department
S. Norris, Manager, Work Control
B. O'Grady, Site Vice President
A. Ohrablo, Shift Technical Engineer, Operations
D. Oshlo, Manager, Radiation Protection
D. Parker, Manager, Maintenance
R. Penfield, Manager, Operations
A. Sarver, Supervisor, System Engineering
D. Sealock, Manager, Training
T. Stevens, Manager, Design Engineering Department
J. Sweley, Civil Engineer, Design Engineering Department
D. VanDerKamp, Manager, Licensing
D. Willis, Manager, Plant Operations
A. Zaremba, Director, Nuclear Safety Assurance

NRC Personnel

T. Farnholtz, Chief, Engineering Branch 1
D. Reinert, Ph.D., Reactor Inspector

LIST OF ITEMS OPENED AND CLOSED

Opened and Closed

05000298/2009003-01	NCV	Failure to Adequately Monitor the Performance of the Diesel Generator Fuel Oil Transfer System (Section 1R12)
05000298/2009003-02	NCV	Inadequate Freeze Protection Procedure Results in Loss of Condensate Storage Tank Vent Path (Section 1R15)
05000298/2009003-03	NCV	Inadequate Tagout Results in Draining of Turbine Equipment Cooling System (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURES

NUMBER	TITLE	REVISION
Emergency Procedure 5.1	Flood	7
Emergency Procedure 5.3GRID	Degraded Grid Voltage	26
General Operating Procedure 2.1.14, Attachments 1, 3, 6	Seasonal Weather Preparations	13
Maintenance Procedure 7.0.11	Flood Control Barriers	7

MISCELLANEOUS

Work Order 4624803, Inventory TSE Flood Control Materials, April 1, 2009
ESAR Section II

SYSTEM OPERATING PROCEDURES

NUMBER	TITLE	REVISION
2.2.12	Diesel Fuel Oil Transfer System	52
2.2.20	Standby AC Power System (Diesel Generator)	75
2.2.67A	Reactor Core Isolation Cooling Component Checklist	20
2.2A.RHR.DIV2	Residual Heat Removal Component Checklist	4

NUMBER	TITLE	REVISION
2.2A.SW.DIV0	Residual Heat Removal Component Checklist	5
2.2A.SW.DIV2	Service Water System Component Checklist	9

Section 1R04: Equipment Alignment

OPERATOR SYSTEMS TRAINING MANUALS

NUMBER	TITLE	REVISION
Book V	Figure 14	15
Book V	Operations RCIC, Figure 2	17
Book V	Operations Residual Heat Removal System	9

Section 1R05: Fire Protection

MISCELLANEOUS Documents

Design Calculations Sheet NEDC 93-161, Revision 4
Fire Hazards Analysis Volumes I and II, February 28, 2003
Fire Pre Plan, Revisions 2 and 4

Section 1R11: Licensed Operator Requalification Program

LESSONS

NUMBER	TITLE	REVISION
SKL052-52-56	OPS Turbine SYN, Earthquake, Loss of SU Trans, SP Leak, ED	5
SKL 052-52-106	2.4SRV/2,4DEH/ATWS/ED on Rad Release	2

Section 1R12: Maintenance Effectiveness

CONDITION REPORT

CR-CNS-2009-02844

MISCELLANEOUS DOCUMENT

Notification 10655691, Functional failure evaluation of component EE-REL-27X15-1G function EE-PF03B Provide essential power to the critical 4160V Division 2 Distribution System, April 28, 2009

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

NUMBER	TITLE	REVISION
Maintenance Procedure 7.3.41	Examination and Meggering of Non-Segregated Buses and Associated Equipment	7
Administrative Procedure 0.49	Schedule Risk Assessment	21
Surveillance Procedure 6.II.610	Off-Site AC Power Alignment	21

WORK ORDERS

4458028	4658447	4688704

CONDITION REPORT

NUMBER	TITLE	DATE
CR-CNS-2009-04494	Jacket Water System Impact for DGJW-CV-11CV Soft Seat Material	June 11, 2009

Section 1R15: Operability Evaluations

PROCEDURES

NUMBER	TITLE	REVISION
Administrative Procedure 0.55	Control Room Envelope Boundary Breach Control	0

WORK ORDER

4688704

CONDITION REPORTS

CR-CNS-2009-00866	CR-CNS-2009-02844	CR-CNS-2009-03185
CR-CNS-2009-03188	CR-CNS-2009-03204	CR-CNS-2009-03281
CR-CNS-2009-04068	CR-CNS-2009-04092	CR-CNS-2009-04093
CR-CNS-2009-04157	CR-CNS-2009-04164	CR-CNS-2009-04494

Section 1R17: Permanent Plant Modifications (71111.17A)

CALCULATIONS NUMBER	TITLE	REVISION
ER-614	Leading Edge Flow Meter + Meter Factor Calculation and Accuracy Assessment for Cooper NPPD	1
NEDC 07-075	Reactor Core Isolation Cooling Pump Flow Acceptance Criteria	0
NEDC 08-019	Evaluation of Permanent Shielding Hazards inside Drywell	0
NEDC 08-020	Evaluation of Permanent Lead Shielding on Drywell Temperature	0
NEDC 96-029	Post LOCA Service Water System Flow Variations with River Level	4
NEDC 97-014	RPS Electrical Protective Assembly Over-Voltage Allowable Value and Setpoint Calculation	1
NEDC 97-015	RPS Electrical Protective Assembly Under-Voltage Allowable Value and Setpoint Calculation	1

CONDITION REPORTS

CR-CNS-1994-00297	CR-CNS-2006-05966	CR-CNS-2008-00352
CR-CNS-2001-00205	CR-CNS-2006-07585	CR-CNS-2008-00521
CR-CNS-2003-06954	CR-CNS-2006-07657	CR-CNS-2009-00315
CR-CNS-2006-03671	CR-CNS-2006-09590	CR-CNS-2009-00316
CR-CNS-2006-03694	CR-CNS-2007-01912	CR-CNS-2009-04241
CR-CNS-2006-03696	CR-CNS-2007-06236	CR-CNS-2009-04241
CR-CNS-2006-03706	CR-CNS-2007-06641	CR-CNS-2009-04313
CR-CNS-2006-04512	CR-CNS-2007-07340	LO-WTCNS-2007-00001

DRAWINGS

NUMBER	TITLE	REVISION
2270	Composite Piping – Reactor Building Plan and Sections within the Drywell	7
731E611	Primary Steam Piping – Nuclear Boiler	4

NUMBER	TITLE	REVISION
Burns & Roe 2028	Flow Diagram Reactor Building & Drywell Equipment Drain System Cooper Nuclear Station	N51
Burns & Roe 2004	Flow Diagram Condensate & Feedwater Systems Cooper Nuclear Station	N51
Westinghouse 3D16201	Analog Systems B&R Governor Low Signal Selector	N02
Burns &Roe 2006	Flow Diagram Circulation Screen Wash & Service Water Systems	N74

EVALUATIONS

NUMBER	TITLE	REVISION
CED 6025820	Service Water Booster Pump Interlock Removal, 50.59 Evaluation # 2007-004	Revision 0
CED 6013140	Service Air Compressor Replacement	Change Notice Number 12
EE 07-017	Reactor Core Injection Cooling and Core Spray Response to an Appendix R event	Revision 0
EE 01-134	Revision of Calculation NEDC 96-039 for Issue as a Status 1 Document	Revision 0
EE 06-004	Reactor Pressure Vessel Loose Parts Evaluation, Control Rod Drive Handle Roller	Revision 1
EE 06-014	Design Basis Stroke Time Requirements for Various Power Operated Valves	Revision 0
EE 06-033	Revision of NEDC 95-003 Packing Friction Update	Revision 0
EE 08-017	RE 24 Evaluation of Debris in the Reactor Vessel Annulus	Revision 0
EE 08-026	Re-configure DGDO-V-19 from Open to Close	Revision 0
EE 09-030	Acceptance of Structural Integrity (SI) Project 0900206.306	Revision 0

MODIFICATIONS

NUMBER	TITLE	REVISION
CED 6025080	1000 HP Residual Heat Removal Service Water Booster Pump Motor	January 23, 2008
CED 6026480	Various Main Steam Air Operated Valve and Actuator Upgrade	May 19, 20 08

MISCELLANEOUS

NUMBER	TITLE	REVISION DATE
NEDC 92-151	Qualification of Pipe Supports for the Turbine Building Main Steam System	4
NEDC 95-003	Determination of Allowable Operating Parameters for CNS Program MOVs	23C1
NEDC 96-003	Determination of Allowable Operating Parameters for CNS MOV Program MOVs	23
NEDC 96-039	DC Powered Motor Operated Valve Stroke Time and Capability Calculation	4
Letter from B. E. Thomas (NRC) to E. M Houser (CNS)	Evaluation of the Hydraulic Aspects of the Caldon Leading Edge Flow Measurement (LEFM) Check and Check Plus Ultrasonic Flow Meters (UFMs) (TAC No. MC6424)	July 5, 2006
Letter from J. N Hannon (NRC) to C. L. Terry (TUE)	Comanche Peak Steam Electric Station Units 1 and 2 – Review of Caldon Engineering Topical Report ER SOP' Improving Thermal Power Accuracy and Plant Safety While Increasing Power Level Using the LEFM System' (TAC Nos. MA2296 and MA2299)	March 8, 1999
Letter from S. A. Richards (NRC) to M. A. Krupa (Entergy)	Waterford Steam Electric Station Unit 3; R\iver Bend Station; and Grand Gulf Nuclear Station – Review of Caldon Inc. Engineering Report ER-157P (TAC Nos. MB2397 MB2399 and MB2468)	December 26,2 2001
Letter from C. F. Lyon (NRC) to S. B. Minahan (NPPD)	Cooper Nuclear Station – Issuance of Amendment Re: Measurement Uncertainty Recapture Power Uprate (TAC NO. MD7385)	June 30, 2008
TCC 4603571	Residual Heat Removal valve RHR-V-1385 Leak Repair	December 26, 2007

PROCEDURES

NUMBER	TITLE	REVISION
AP 0.5.CR	Condition Report Initiation Review and Classification	13
CAP Deskguide 3	Trend Coding	38
CNS Engineering Division Procedure EDP-03	Configuration Change Guidance	11
CNS Engineering Division Procedure EDP-06	Supporting Requirements for Configuration Change Control	27
CNS Procedure 0.4	Procedure Change Process	47
CNS Procedure 0.8	50.59 Reviews	17
CNS Procedure 3.4	Configuration Change Control	47
CNS Procedure 3.4.4	Temporary Configurations Change	12
CNS Procedure 3.4.5	Engineering Evaluations	14
CNS Procedure 3.5	Special Procedures	20
Emergency Procedure 5.3 EMPWR	Emergency Power During Modes 1, 2, or 3	31
ENN-DC-112	Engineering Request and Project Initiation Process	3C2
EP 3.3SAFE	Safety Assessment	10
General Operating Procedure 2.1.12	Control Room Data	90
SOP 2.2.70	RHR Service Water Booster Pump System	65
System Operating Procedure 2.2.12	Diesel Fuel Oil Transfer System	52

SCREENINGS

NUMBER	TITLE	REVISION/ DATE
50.59 Screen # 18	USAR Change for Accumulator Testing	0
CED 0618461	Agastat E7012 Time Delay Relay Replacement with NTS-812 Solid State Relays	2
CED 6023681	Leading Edge Flow Meter System - Feedwater Flow Measurement	1
EE 04-072	ECCS Suction Strainers	3

NUMBER	TITLE	REVISION/ DATE
EE 08-032	Revision of NEDC 95-003 and NEDC 00-110 to incorporate RE 24 data	0
EE 09-009	Reclassify CRD Accumulator Pressure Switch CNS-O-CRD-PS-130-XX-XX	0
TCC 4603571	Residual Heat Removal valve RHR-V-1385 Leak Repair	December 26, 2007
TCC 4665414	DG-1 Float Valve CNS-1-DGDO-FOV-FLTV10 Soft Seat Removal	December 16, 2008

Section 1R19: Postmaintenance Testing

PROCEDURES

NUMBER	TITLE	REVISION
Surveillance Procedure 6.EE.302	4160V Bus 1G Undervoltage Relay and Relay Timer Functional Test (Div 2)	18
Maintenance Procedure 7.3.41	Examination and Meggering of Non-Segregated Buses and Associated Equipment	7
Administrative Procedure 0.49	Schedule Risk Assessment	21
Surveillance Procedure 6.RCIC.201	RCIC Power Operated Valve Operability Test (IST)	17
Surveillance Procedure 6.RCIC.102	RCIC IST and 92 Day Test	24
Surveillance Procedure 6.2DG.101	Diesel Generator 31 Day Operability Test (IST) (DIV 2)	62

WORK ORDERS

4458028	4565846	4637609
4688704	4698353	

CONDITION REPORTS

CR-CNS-2009-03094
CR-CNS-2009-03282

MISCELLANEOUS DOCUMENTS

NEDC 09-034, Structural Qualification of DG2-LO Piping Support Installed by CED 6029681
CED 6029681, Modification of Engine Driven Lube Oil Pump (EDLO) 1 & 2 Discharge Piping
DKE-6029681-2, Cooper Nuclear Station DG2LO Pipe Support, Revision B

Section 1R22: Surveillance Testing

PROCEDURES	TITLE	REVISION
Chemistry Procedure 8.8.1.14	Radiochemical Iodines Analysis	15
Surveillance Procedure 6.2DG.101	Diesel Generator 31 Day Operability Test (IST) (DIV 2)	62
Surveillance Procedure 6.2RHR.101	RHR Test Mode Surveillance Operation (IST) (Div 2)	23
Surveillance Procedure 6.2RHR.201	RHR Power Operated Valve Operability Test (IST) (Div 2)	20
Surveillance Procedure 6.2DG.101	Diesel Generator 31 Day Operability Test (IST) (DIV 2)	62

WORK ORDERS

4637117
4637125

CONDITION REPORT

CR-CNS-2009-03275

Section 1EP6: Drill Evaluation

EMERGENCY PLAN IMPLEMENTING PROCEDURES	TITLE	REVISION
5.7.1	Emergency Classification	39
5.7.2	Emergency Director Emergency Plan Implementing Procedure	26
5.7.14	Stable Iodine Thyroid Blocking (KI)	15

Section 4OA1: Performance Indicator Verification

PROCEDURES	TITLE	REVISION
Administrative Procedure 0-PI-01	Performance Indicator Program	23
Chemistry Procedure 8.4	Routine Sampling and Sample Valve Control	27
Chemistry Procedure 8.8.1.14	Radiochemical Iodines Analysis	15

CONDITION REPORTS

CR-CNS-2009-04176
CR-CNS-2009-04193

MISCELLANEOUS DOCUMENTS

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 5
Chemistry Surveillance Report 8.5.2.1E, May 28, 2009
Pre-Job Brief Worksheet for Reactor Water Sampling
Chemistry Department "Dailies and Weeklies Hints table (11-21-06)"
6.LOG.601, Daily Surveillance Log - Modes 1, 2, and 3, Revision 102

Section 4OA2: Identification and Resolution of Problems

CONDITION REPORTS

CR-CNS-2008-00819	CR-CNS-2008-06519	CR-CNS-2008-07346
CR-CNS-2008-09094	CR-CNS-2008-09111	CR-CNS-2009-00866
CR-CNS-2009-02520	CR-CNS-2009-02495	CR-CNS-2009-03202
CR-CNS-2009-03977	CR-CNS-2009-04526	CR-CNS-2009-05247
CR-CNS-2009-05249	CR-CNS-2009-05297	CR-CNS-2009-07968
CR-CNS-2009-08884		

MISCELLANEOUS DOCUMENTS

CNS System Health Report, DC Electrical, March 2009
Quality Assurance Audit Report 09-04, "Procurement," June 11, 2009
CNS Corrective Action Program Trend Report, April 2009

4OA5 Other Activities

PROCEDURE	TITLE	REVISION
Administrative Procedure 0.9	Tagout	66

CONDITION REPORTS

CR-CNS-2007-07623
CR-CNS-2009-00232