



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

August 4, 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 05000298/2008003

Dear Mr. Minahan:

On June 21, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Cooper Nuclear Station. The enclosed report documents the inspection results, which were discussed on July 15, 2008, with Mr. M. Colomb, 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.

Based on the results of this inspection, four NRC-identified findings of very low safety significance were identified. Three of the findings involved violations of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as noncited violations in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of a noncited violation, 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, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region IV, 612 E. Lamar Blvd., Arlington, TX 76011-9908; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Cooper Nuclear Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS), 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  
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Docket: 50-298  
License: DPR-46

Enclosure: NRC Inspection Report 05000298/2008003  
w/Attachment: Supplemental Information

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SUNSI Review Completed: GBM ADAMS:  Yes No Initials: GBM  
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SRI:DRP/C	RI:DRP/C	SPE:DRP/C	C:DRS/EB1	C:DRS/EB2
NHTaylor	MLChambers	GBMiller	RLBywater	GEWerner
/RA electronic/	/RA electronic/	/RA/	/RA/	/RA/
08/04/2008	08/04/2008	07/31/2008	07/31/2008	08/01/2008
C:DRS/OB	C:DRS/PSB	C:DRS/EB2	C:DRP/C	
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U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Dockets: 50-298  
Licenses: DPR-46  
Report: 05000298/2008003  
Licensee: Nebraska Public Power District  
Facility: Cooper Nuclear Station  
Location: 72676 648A Avenue  
Brownville, NE 68321  
Dates: March 23 through June 21, 2008  
Inspectors: N. Taylor, Senior Resident Inspector  
M. Chambers, Resident Inspector  
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W. Sifre, Senior Reactor Inspector  
M. Bloodgood, Reactor Inspector  
E. Holcomb, Mechanical Engineer-Design Engineering  
Approved By: G. Miller, Chief, Project Branch C  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000298/2008003; 03/23/2008 - 06/21/2008; Cooper Nuclear Station. Inservice Inspection Activities, Maintenance Risk Assessments and Emergent Work Control, Plant Modifications, Followup of Events and Notices of Enforcement Discretion.

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

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to build a permanent drywell shielding system in accordance with the approved design documents. During a prestartup inspection of the drywell, inspectors discovered numerous assembly errors and unevaluated piping interactions with safety-related piping in the as-left configuration. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2008-05208.

The finding is more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. Using the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," flowchart, the inspectors determined that the finding is of very low safety significance because it did not result in the loss of any mitigation capability identified in the Manual Chapter 0609, Appendix G, Attachment 1, worksheet and that no qualitative risk assessment is required. The cause of this finding is related to the human performance crosscutting component of Work Practices because licensee personnel provided inadequate management oversight of contractors erecting permanent scaffolding in the drywell [H.4(c)] (Section 71111.18).

- SLIV. The inspectors identified a noncited violation of 10 CFR 50.55a(g)(5)(iii) for the licensee's failure to notify the NRC of the inability to meet the requirements of the American Society of Mechanical Engineers Code for Class 1 and 2 welds performed during Refueling Outage 22 in February 2005. Specifically, on April 21, 2008, the inspectors identified that welds associated with design changes to the reactor feedwater and high pressure core injection systems performed during Refueling Outage 22 did not meet the 90 percent total area coverage, required by ASME Section XI, during the performance of the preservice inspection ultrasonic testing. The licensee failed to notify the NRC of

the inability to meet the ASME Code requirements within 12 months from the end of the third 10-year inservice inspection interval as required by 10 CFR 50.55a(g)(5)(iv).

The failure to notify the NRC constituted a performance deficiency of 10 CFR 50.55a(g)(5)(iii). In accordance with Manual Chapter 0612, Appendix B, Section 2, this finding has the potential to impact the NRC's ability to perform its regulatory function since the licensee did not notify the NRC within the designated time, and as a result, impeded the NRC's ability to evaluate and decide on the potential ASME code relief in a timely manner. This finding is greater than minor because it is associated with the Mitigating System Cornerstone, in that the licensee failed to ensure the reliability of safety-related equipment due to the failure to meet ASME Code requirements for the Class 1 and 2 system pressure boundary welds since February 2005. In accordance with Supplement 1 of the Enforcement Policy, the violation was characterized as Severity Level IV because it involved a failure to meet regulatory requirements that have more than minor safety significance. This finding is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy, due to the NRC's review and acceptance of the licensee's fourth cycle Risk Informed - Inservice Inspection program which no longer requires these welds to be periodically inspected in accordance with ASME Code, Section XI (Section 71111.08G).

- Green. The inspectors identified a Green noncited violation of 10 CFR 50.65(a)(4) with three examples regarding the licensee's failure to manage the increase in risk that resulted from maintenance activities. Specifically, the licensee did not post protected equipment signs on risk sensitive equipment during periods of elevated risk as required by Administrative Procedure 0-PROTECT-EQP. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2008-03555.

The finding is more than minor because it is related to the licensee's failure to implement prescribed significant compensatory measures. The inspectors reviewed Manual Chapter 0612, Appendix E, example 7.g, and determined that it was not applicable to this situation due to the fact that the licensee does not maintain a shutdown probabilistic risk analysis model, and as such an incremental core damage probability cannot be estimated for the plant conditions that existed at the time of the performance deficiency. For the same reason, the inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used to determine the risk significance of the finding. Using the qualitative review process of Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the inspectors determined that this issue was of very low safety significance because it did not result in any additional loss of defense in depth systems. The cause of this finding is related to the human performance crosscutting component of Work Practices because licensee personnel did not follow the requirements of Procedure 0-PROTECT-EQP [H.4(b)] (Section 71111.13).

## Cornerstone: Initiating Events

- Green. A self-revealing Green finding was identified associated with the licensee's failure to follow Administrative Procedure 0.40, "Work Control Program," requirements that would have ensured the 4160 Volt bus breaker fuse maintenance would not trip reactor recirculation Pump B. Implementation of inadequate maintenance instructions resulted in an unexpected trip of the reactor recirculation Pump B and an unplanned reduction in reactor power. Specifically, the licensee failed to perform a thorough review of the electrical drawings required to fully understand the consequences of pulling fuses for maintenance in the 4160 Volt breaker cubicle. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2008-4400.

This finding was more than minor since it affected the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability during power operations. Based on the results of a Significance Determination Process, Phase 1 Evaluation, the finding was determined to have very low safety significance since it did not contribute to the likelihood of a loss-of-coolant accident, did not contribute to a loss-of-mitigation equipment, and did not increase the likelihood of a fire or internal or external flood. The cause of this finding is related to the human performance crosscutting component of Work Practices because personnel did not effectively use self-checking techniques while determining the plant impact of the proposed fuse removal [H.4(a)] (Section 4OA3).

## B. Licensee-Identified Violations

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

## REPORT DETAILS

### Summary of Plant Status

Cooper Nuclear Station (CNS) began the inspection period at 90 percent power on March 23, 2008, during coast down to Refueling Outage 24. On April 12, 2008, the plant shut down for Refueling Outage 24. Following the outage, the reactor returned to full power May 23, 2008, where it remained for the rest of the inspection period.

### **1. REACTOR SAFETY**

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

#### 1R01 Adverse Weather Protection (71111.01)

#### .1 Readiness For Seasonal Extreme Weather Conditions

##### a. Inspection Scope

The inspectors performed a detailed review of the licensee's procedures and preparations for operating the facility during an extended period of time when ambient outside temperature was high and the ultimate heat sink was experiencing elevated temperatures. Inspectors focused on plant specific design features and implementation of the procedures for responding to or mitigating the effects of these conditions on the operation of the facility. Inspection activities included a review of the licensee's adverse weather procedures, daily monitoring of the off-normal environmental conditions, and that operator actions specified by plant specific procedures were appropriate to ensure operability of the facility's normal and emergency cooling systems.

- May 1, 2008, Warm Weather Preparations

Documents reviewed by the inspector included:

- General Operating Procedure 2.1.14, "Seasonal Weather Preparations," Revision 11
- Work Order (WO) 4542156
- CR-CNS-2008-02093
- Emergency Procedure 5.3 GRID, "Degraded Grid Voltage," Revision 23

This inspection constitutes one readiness for seasonal extreme weather condition sample as defined in Inspection Procedure 71111.01.

##### b. Findings

No findings of significance were identified.

.2 Readiness to Cope With External Flooding

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), the plant flooding analysis, and plant procedures to assess seasonal susceptibilities involving external flooding; reviewed the UFSAR and corrective action program (CAP) to determine if the licensee identified and corrected flooding problems; verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and walked down the areas listed to verify their adequacy in protecting against flooding.

Documents reviewed by inspectors included:

- Emergency Procedure 5.1 FLOOD, "Flood," Revision 5

This inspection constitutes one readiness to cope with external flooding sample as defined in Inspection Procedure 71111.01.

b. Findings

No findings of significance were identified.

.3 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors reviewed the procedures for operation and continued availability of offsite and alternate AC power systems, reviewed the communications protocols between the transmission system operator and the licensee, and verified that the appropriate information is exchanged when issues arise that could impact the offsite power system.

- May 1, 2008, Review of Summer Readiness of Offsite and Alternate AC Power Systems

Documents reviewed by the inspector included:

- General Operating Procedure 2.1.14, "Seasonal Weather Preparations," Revision 11
- Emergency Procedure 5.3 GRID, "Degraded Grid Voltage," Revision 23

This inspection constitutes one sample for summer readiness of offsite and alternate AC power systems as defined in Inspection Procedure 71111.01.

b. Findings

No findings of significance were identified.

## 1R04 Equipment Alignment (71111.04)

### .1 Quarterly Partial System Walkdowns

#### a. Inspection Scope

The inspectors selected the systems below 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 impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, Administrative TS, outstanding WOs, condition reports (CRs), 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 CAP with the appropriate significance characterization.

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

- April 23, 2008, Residual heat removal (RHR) Train A for shutdown cooling
- April 29, 2008, RHR Train B for shutdown cooling
- April 29, 2008, Service water (SW) Train B
- May 7, 2008, RHR shutdown cooling Train A through RHR cross connect

These activities constituted four partial system walkdown samples as defined by Inspection Procedure 71111.04.

Documents reviewed by the inspector included:

- System Operating Procedure 2.2.69.2, "RHR System Shutdown Operations," Revision 64
- System Operating Procedure 2.2.71, "Service Water System," Revision 99

#### b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors reviewed the below listed areas to assess if the licensee 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 impact equipment which 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 CAP.

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

- April 14, 2008, Drywell
- April 21, 2008, Fire Zone 2A-1, Northwest 903 Level, Appendix R Analysis Zone
- April 23, 2008,, Fire Zone 1C, Northwest Quad 881 and 859 Levels, RHR Pump Rooms 1A and 1B
- May 1, 2008, Fire Zone 1D: Southwest Quad 881 and 859 Levels, RHR Pump Rooms 1B and 1D

These activities constituted four quarterly fire protection inspection samples as defined by Inspection Procedure 71111.05.

Documents reviewed by the inspectors included:

- CNS Fire Hazards Matrix Fire Area 1, Fire Zone 2A-1, dated August 12, 2005
- Procedure 0.7.1, "Transient Combustible Evaluations 08-105," Attachment 4, dated March 7, 2008

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08G)

From April 16-23, 2008, the inspectors performed Inspection Procedure 71111.08, "Inservice Inspection Activities." Inspection Procedure 71111.08 requires a minimum sample size, for boiling water reactors, of one for Section 02.01. The inspectors fulfilled the requirements of Inspection Procedure 71111.08.

02.01 Inspection Activities Other Than Steam Generator Tube Inspections, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control

a. Inspection Scope

This inspection assesses the effectiveness of the station's program for monitoring degradation of vital system boundaries. The inspection includes a review of the licensee's nondestructive examination and welding programs. The inspectors are to verify that ISI and welding activities are performed in accordance with American Society of Mechanical Engineers (ASME) Code, other regulatory requirements, and licensee commitments.

The inspectors reviewed five volumetric examinations and one surface examination. From those six examinations, the inspectors observed four ultrasonic examinations. The inspectors verified that each examiner held qualifications to perform each examination.

Examinations Reviewed

COMPONENT DESCRIPTION	EXAMINATION TYPE	REPORT NUMBER
Reactor Pressure Vessel Core Spray Internal Examination	Remote Visual (VT-3)	4547373-0030
Reactor Vessel Remote In-Vessel Ultrasonic Examination	Ultrasonic Examination	4547374-0040
Reactor Vessel Nozzle to Shell Weld N2-H	Ultrasonic Examination	4547544-0050
Reactor Vessel Nozzle to Shell Weld N2-K	Ultrasonic Examination	4547544-0050
Residual Heat Removal Elbow to Pipe Weld	Ultrasonic Examination	4547549-0050
Main Steam Motor Operated Valve Repair/Replacement	Radiography	MS-MOV-MO77

The inspectors reviewed the site procedures including the Risk Informed - Inservice Inspection (RI-ISI) program for the fourth 10 year ISI interval to verify that recordable indications were dispositioned in accordance with ASME Code or an NRC approved alternative. During the performance of the inspection activities, no recordable indications were identified or accepted for continued service.

The inspection procedure requires verification of one to three welds that the welding process and welding examinations were performed in accordance with ASME Code Class 1 or 2 requirements or an NRC approved alternative. The inspectors reviewed one welding activity performed during the past operating cycle.

b. Findings

Introduction. The inspectors identified a Severity Level IV noncited violation (NCV) of 10 CFR 50.55a(g)(5)(iii) for the licensee's failure to notify the NRC of the inability to meet the requirements of the ASME Code for Class 1 and 2 welds performed during Refueling Outage 22 in February 2005.

Description. On April 21, 2008, the inspectors reviewed the RI-ISI program for the fourth 10 year ISI interval. During this review, the inspectors identified several preservice ultrasonic examinations of ASME Code Class 1 and 2 components in which the required ultrasonic examination of the total weld area was not adequately performed. These examinations had geometric constraints, which prevented obtaining the required ASME, Section XI, Code examination of 90 percent total volume. The licensee failed to notify the NRC, in accordance with 10 CFR 50.55a(g)(5)(iii), of the inability to meet the ASME Code requirements for these examinations which were completed in the third 10 year inspection cycle (March 1, 1996, to February 28, 2006). The licensee, in accordance with 10 CFR 50.55a(g)(5)(iv), had until February 28, 2007, to make this notification. Specifically, on April 21, 2008, it was determined that the licensee had not notified nor requested relief for the weld examinations. Examples of welds with ultrasonic testing less than 90 percent total volume include:

- FWA-BJ-31R1, RF-CV-16CV valve to elbow weld, 87 percent total volume, WO 4321732
- FWD-BJ-30R1, RF-CV-14CV valve to elbow weld, 87 percent total volume, WO 4321730
- FWD-BJ-38R1, RF-CV-13CV 18 inch valve to tee, 56.5 percent total volume, WO 4321729
- PSA-CF-42, HPCI-V-271, pipe to valve weld, 87.45 percent total volume, WO 4358881
- PSA-CF-43, HPCI-V-271, valve to pipe weld, 86.9 percent total volume, WO 4358881
- PSA-CF-44, HPCI-V-272, pipe to valve weld, 87.75 percent total volume, WO 4358881

- PSA-CF-45, HPCI-V-272, valve to pipe weld, 87.15 percent total volume, WO 4358881

The welds associated with the high pressure coolant injection (HPCI) system were added to the licensee's RI-ISI program as welds not requiring inspection during the fourth 10 year inspection cycle, which started on March 1, 2006, in Relief Request 34, Revision 2. The welds associated with the reactor feedwater system check valves were initially in the RI-ISI program. The NRC approved the addition and classification of these welds as R-A valves in the licensee's RI-ISI program which have a 0 percent sample size during the fourth 10-year inspection cycle.

Analysis. The performance deficiency associated with this finding involves the licensee's failure to comply with the requirements of 10 CFR 50.55a(g)(5)(iii). This finding is greater than minor because it is associated with the Mitigating System Cornerstone, in that the licensee failed to ensure the reliability of safety-related equipment due to the failure to meet ASME Code requirements for the Class 1 and 2 system pressure boundary welds since February 2005. In accordance with Manual Chapter 0612, Appendix B, Section 2, this finding has the potential to impact the NRC's ability to perform its regulatory function since the licensee did not notify the NRC within the designated time, and as a result, impeded the NRC's ability to evaluate and decide on the potential ASME code relief in a timely manner. In accordance with Supplement 1 of the Enforcement Policy, the violation is characterized as Severity Level IV because it involves a non-willful compromise of examinations required by 10 CFR 50.55a that have more than minor safety significance.

Enforcement. Part 50.55 a(g)(5)(iv) of Title 10 of the Code of Federal Regulations, states, "Where an examination requirement by the code or addenda is determined to be impractical by the licensee and is not included in the revised ISI program as permitted by paragraph (g)(4) of this section, the basis for this determination must be demonstrated to the satisfaction of the Commission not later than 12 months after the expiration of the initial 120-month period of operation from the start of facility commercial operation and each subsequent 120-month period of operation during which the examination is determined to be impractical." Part 20 of Title 10 CFR 50.55a(g)(5)(iii) also states "If the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the Commission and submit, as specified in Section 50.4, information to support the determinations." Contrary to the above, on April 21, 2008, NRC inspectors identified that the licensee failed to notify the NRC within 12 months after the end of the third 120-month period of operation for the failure to obtain 100 percent coverage of the welds during preservice inspection ultrasonic testing conducted during Refueling Outage 22. This finding is considered a violation of 10 CFR 50.55a(g)(5)(iii). This finding was determined to be of very low safety significance since the ASME Code relief would have likely been approved and the NRC approved the incorporation of the welds into the licensee's RI-ISI program, allowing for the removal of the welds from the ISI inspection periodicity. Therefore, the finding is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy due to the NRC's review and acceptance of the licensee's fourth cycle RI-ISI program, which no longer requires these welds to be periodically inspected in accordance with ASME Code, Section XI. This is identified as NCV 05000298/2008003-01, "Failure to Notify the NRC of the Inability to Meet ASME Code Requirements." This violation is documented in the licensee's CAP as CR-CNS-2008-02714.

## 02.02 Identification and Resolution of Problems

### a. Inspection Scope

The inspectors reviewed six CRs which dealt with ISI activities and found that the corrective actions were appropriate. From this review the inspectors concluded that the licensee had an appropriate threshold for entering issues into the CAP and has procedures that direct a root cause evaluation when necessary. The licensee also had an effective program for applying industry operating experience.

### b. Findings

No findings of significance were identified.

## 1R11 Licensed Operator Regualification Program (71111.11)

### Licensee Regualification Examinations

#### a. Inspection Scope

The inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario involved a tornado, station blackout, and a loss of shutdown cooling.

- June 18, 2008, Team 1 evaluated drill

Documents reviewed by the inspector included:

- Drill package for June 18, 2008, emergency drill

This inspection constitutes 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 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) of the maintenance rule (MR)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or reclassification
- Verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (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 CAP with the appropriate significance characterization. Documents reviewed are listed in the attachment.

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

- February 13, 2008, Diesel Generator (DG) 2 lube oil leak
- February 20, 2008, Elevated release point Kaman failure

This inspection constitutes two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12.

b. Findings

Introduction. The inspectors identified an unresolved item associated with the potentially inadequate installation of a flexible spool piece in the DG 2 main lube oil pump discharge line. Specifically, the improper installation of the flexible spool piece resulted in the fatigue failure of the main lube oil discharge piping and required DG 2 to be secured due to worsening lubricating oil leakage during a surveillance test.

Description. On February 13, 2008, DG 2 was started for a monthly surveillance test per Surveillance Procedure 6.2DG.101. Approximately 1 hour after the start of the engine, an oil leak was discovered on the main lube oil pump discharge piping. As operators observed the leak, it worsened from seepage to an active stream of lubricating oil as the leak site developed into a 3-inch radial crack at the toe of a flange weld. Upon receiving the report that the oil leak was worsening, the operations shift manager declared DG 2 inoperable and DG 2 was secured. The licensee's initial root cause effort determined that the oil leak was caused by vibration-induced fatigue failure, which had recently developed due to the improper installation of a flexible spool piece in the discharge piping of the main lube oil pump. The licensee documented this root cause

determination in CR-CNS-2008-00968. The inspectors determined that the improper installation of the flexible spool piece was a performance deficiency, but that additional information was needed to determine the significance of any associated violations. Specifically, the licensee has not been able to demonstrate how or if the leak would have continued to develop with additional engine run time. The licensee has conducted an offsite evaluation of the failed spool piece with inconclusive results. The licensee is currently conducting an offsite performance test to determine how the cracked pipe would have behaved with continued DG 2 operation. The inspectors will review the results of this testing to determine whether any violations of NRC requirements occurred.

Analysis. The inspectors determined that additional information was required to determine whether or not a violation of NRC requirements occurred and to determine the significance of any violations that are identified.

Enforcement. Additional information was needed to determine whether a violation of regulatory requirements occurred. Pending further review of additional information provided by the licensee, this issue is being treated as an unresolved item: URI 05000298/2008003-02, "Misaligned Lubricating Oil Piping Causes DG 2 Failure."

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

a. Inspection Scope

The inspectors reviewed the licensee'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:

- April 15, 2008, Dredging between weir wall and intake structure
- April 16, 2008, Bus G outage service water booster Pump A
- April 19, 2008, Availability of fuel pool cooling Pump B on alternate source
- April 29, 2008, RHR heat exchanger room posting

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. 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 TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These activities constituted four samples as defined by Inspection Procedure 71111.13.

b. Findings

Introduction. The inspectors identified a Green NCV 10 of CFR 50.65(a)(4) with three examples regarding the licensee's failure to manage the increase in risk that resulted from maintenance activities. Specifically, the licensee did not post protected equipment

signs on risk sensitive equipment during periods of elevated risk as required by Administrative Procedure 0-PROTECT-EQP.

Description. Administrative Procedure 0-PROTECT-EQP, "Protected Equipment Program," Revision 5, requires implementation of protected equipment boundary controls during outages when scheduled risk status is yellow for greater than 12 hours, orange or red. The determination of what equipment needs to be protected is performed by the work control group based upon an input from the work scheduling and risk management staff. The work control group communicates the list of protected equipment to the control room staff using a protected equipment electronic tracking form. Procedure 0-PROTECT-EQP then requires posting signs and/or barriers around the listed equipment, as well as updating protected equipment status boards located in several prominent places throughout the station. During Refueling Outage RE24, inspectors identified three examples of failures to implement the requirements of Procedure 0-PROTECT-EQP, the details of which are described below:

In the first example, inspectors noted that on April 15, 2008, the list of required protected equipment on the Outage Control Center turnover sheet did not match the posted equipment in the plant. Specifically, the Outage Control Center turnover sheet listed that service water booster Pumps A and C needed to be protected due to an existing yellow risk window and the planned inoperability of the other train. No protected equipment signs were hung on these pumps until prompting by the inspectors. The inspectors subsequently determined that the protected equipment program electronic tracking form did not identify the need to post the service water booster pumps, despite the fact that they were necessary to support the safety function for Train A of shutdown cooling.

In the second example, the inspectors identified an inadequate protected equipment posting on April 17, 2008. On April 17, the licensee's Paragon risk assessment software indicated that outage risk was orange due to the combined unavailability of the 4160 V Division 2 switchgear and its supported loads. In order to treat risk as "administratively yellow," the licensee implemented a contingency measure to provide alternate power to fuel pool cooling Pump B. During a walkdown of this alternate power source, inspectors noted that the 12.5 kV disconnect switch for the temporary power source was posted with a protected equipment sign, but neither the temporary power lines themselves nor the fuel pool cooling pump breaker cubicle were appropriately posted as protected equipment. The inspectors noted during the inspection that a supplemental employee was actually manipulating the temporary power cables in an attempt to move them out of the way to gain access to another cable. In response to this issue, the licensee posted the required equipment and initiated CR-CNS-2008-02538.

In the third example, inspectors noted on April 29, 2008, that a required protected equipment sign was missing from the door of the RHR Train B heat exchanger room on the 932' level. This sign was required due to an ongoing division one work window creating a yellow risk window. The licensee posted the missing sign and documented the procedural error in CR-CNS-2008-03155.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to appropriately manage risk actions during periods of elevated nuclear risk. The finding is more than minor because it is related to the licensee's failure to implement prescribed significant compensatory measures. The inspectors reviewed Manual Chapter 0612, Appendix E, example 7.g, and determined that it was not

applicable to this finding due to the fact that the licensee does not maintain a shutdown probabilistic risk analysis model, and as such an incremental core damage probability cannot be estimated for the plant conditions that existed at the time of the performance deficiency. For the same reason, the inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," Flowchart 2, could not be used to determine the risk significance the finding. Using the qualitative review process of Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the inspectors determined that this issue was of very low safety significance because it did not result in any additional loss of defense in depth systems. The cause of this finding is related to the human performance crosscutting component of Work Practices because licensee personnel did not follow the requirements of Procedure 0-PROTECT-EQP [H.4(b)].

Enforcement. 10 CFR 50.65(a)(4) requires, in part, that prior to performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to this requirement, on April 15, April 17 and April 29, 2008, the licensee failed to manage the increase in risk resulting from proposed maintenance activities. Specifically, the licensee did not post protected equipment signs on risk sensitive equipment as required by Procedure 0-PROTECT-EQP. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CR-CNS-2008-03555, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000298/2008003-03, "Failure to Properly Manage Elevated Risk."

#### 1R15 Operability Evaluations (71111.15)

##### a. Inspection Scope

The inspectors reviewed the following issues:

- March 31, 2008, DG 1 slow start
- April 8, 2008, Standby liquid control operability following loss of heat trace
- April 16, 2008, Results of inspections of buried service water piping
- April 20, 2008, DG 2 load oscillations

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 TS 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 TS and UFSAR 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.

This inspection constitutes four samples as defined in Inspection Procedure 71111.15.

Documents reviewed by the inspectors included:

- CR-CNS-2008-01960
- CR-CNS-2008-02139
- Surveillance Procedure 6.SLC.601, "SLC Tank Sampling," Revision 7
- WO 4541909

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following permanent modification:

- Permanent drywell shielding modification

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

This inspection constituted one sample for permanent modifications as defined in Inspection Procedure 71111.18.

Documents reviewed by inspectors included:

- Change Evaluation Document (CED) 60117681

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to build a permanent drywell shielding system in accordance with the approved design documents. During a pre-startup inspection of the drywell, inspectors discovered numerous assembly errors and unevaluated piping interactions with safety-related piping in the as-left configuration.

Description. During the Refueling Outage RE24, the licensee scheduled installation of CED 60117681, "Drywell Permanent Shielding." This modification consisted of a large,

distributed scaffolding system built within the drywell for the purpose of hanging permanent lead blankets to reduce accumulated dose during future refueling outages. Because of the high radiological source term at Cooper Nuclear Station, these shielding structures had been designed to be built around the RHR and reactor recirculation vertical piping runs attached to the reactor pressure vessel. The installation of this shielding modification was the largest dose-estimate job for the outage, estimated at over 38 man-rem. The modification was developed by a vendor engineering firm. In addition to developing the CED package, the engineering firm was also contracted to oversee the construction of the shielding system which was being performed by a separate contract firm.

After reviewing the scope of the planned modification with the licensee, the inspectors requested to be notified when the modification was completed so that an as-left walkdown could be performed. On May 5, 2008, with the drywell closeout milestone approaching, the inspectors inquired as to whether or not the modification had been completed and accepted by the licensee. Upon being notified by CNS Project Management staff that it had been accepted for startup, the inspectors performed a thorough walkdown of the system's as-built configuration on May 7, 2008. Inspectors noted many discrepancies, including multiple examples of the following configuration errors:

- Permanent lead shielding blankets resting on or against small-bore, operable safety related piping systems, including valve-body drain lines on the RHR shutdown cooling common suction line
- Scaffolding members near or in contact with drywell fan coil units
- Scaffolding members not fully assembled (nuts missing from coupling devices, required trigger locking pins not installed, washers missing, inadequate thread engagement)

The inspectors learned that during the modification process, the contractor had accumulated dose much more quickly than had been anticipated and a decision had been made to stop all work on the modification on April 30, 2008. This work stoppage left the system in a partially-completed state with most of the scaffolding installed, but only about 25 percent of the intended lead blankets installed.

After receiving the inspector's comments on the as-built condition of the scaffolding system, the licensee conducted several days of independent walkdowns and identified many more similar configuration issues. For each issue identified, the scaffolding was either: (1) restored to its approved design, (2) removed from the drywell, or (3) evaluated for acceptability for power operations. The inspectors reviewed the results of the licensee's analysis and determined that the as-left interference issues did not threaten the operability of any safety-related systems for the next cycle, and that none of the as-found configuration errors had challenged the operability of any TS required systems during the outage. The inspectors also noted that the rework on the system required an additional accumulated dose of 1.7 man-rem over the course of 5 days, in addition to continuing seismic analysis that continued until reactor startup on May 18, 2008.

The inspectors noted that while the CNS Quality Control group did perform inspections of several critical welds in the scaffold system, no CNS walkdown of the as-left configuration was planned for the entire scaffold system, nor had any management walkdown of the system been planned prior to power operation. The licensee documented these errors under CR-CNS-2008-05208.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to comply with the requirements of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. Using the Manual Chapter 0609 Appendix G, "Shutdown Operations Significance Determination Process," flowchart, the inspectors determined that the finding has very low safety significance because it did not result in the loss of any mitigation capability identified in the Manual Chapter 0609, Appendix G, Attachment 1, worksheet and that no qualitative risk assessment is required. The cause of this finding is related to the human performance cross cutting component of Work Practices because licensee personnel provided inadequate management oversight of contractors erecting permanent scaffolding in the drywell [H.4(c)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Contrary to this requirement, on May 7, 2008, inspectors discovered that a licensee contractor had not built a permanent drywell shielding system in accordance with the approved design package which introduced several unevaluated interactions with safety-related components. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CR-CNS-2008-05208, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000298/2008003-04, "Failure to Construct Drywell Shielding According to Design Documents."

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 4, 2008, Division 2 sequential load test
- April 23, 2008, Procedure 6.2DG.103 following digital reference unit replacement
- April 23, 2008, Procedure 6.2RHR.101 following replacement of RHR Pump D motor

- May 8, 2008, Post work testing of PCIS-REL-K59
- May 11, 2008, ASME Code leakage test of reactor coolant system

These activities were selected based upon the SSCs ability to impact risk. The inspectors evaluated these activities for the following (as applicable): 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, tests were performed as written in accordance with properly reviewed and approved procedures, equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 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 CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed during the inspection are listed in the attachment.

This inspection constitutes five samples as defined in Inspection Procedure 71111.19.

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the contingency plans for the Refueling Outage RE24, conducted April 12 through May 23, 2008, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below. Documents reviewed during the inspection are listed in the attachment.

- Licensee configuration management, including maintenance of defense-in-depth for key safety functions and compliance with the applicable TS when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error

- Controls over the status and configuration of electrical systems to ensure that TS and outage safety plan requirements were met, and controls over switchyard activities
- Monitoring of decay heat removal processes, systems, and components
- Controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss
- Controls over activities that could affect reactivity
- Maintenance of secondary containment as required by TS
- Refueling activities, including fuel handling
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers and reactor physics testing
- Licensee identification and resolution of problems related to refueling outage activities

This inspection constitutes one refueling outage sample as defined in Inspection Procedure 71111.20.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Routine Surveillance Testing

a. Inspection Scope

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; the calibration frequency was in accordance with TS, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were

performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished; prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test; equipment was returned to a position or status required to support the performance of the safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the CAP.

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- March 3, 2008, Procedure 6.1EE.302, Relay 27X15/1F failure
- April 12, 2008, Procedure 6.RCS.601, TS Monitoring of Reactor Coolant System Cool Down Rates
- April 23, 2008, Procedure 6.2RHR.102 Following Replacement of RHR Pump D Motor (IST)
- April 11, 2008, Procedure 6.MS.201, Main Steam Isolation Valve 86A Failed Inservice Test (IST)
- April 11, 2008, Local leak rate testing of main steam isolation Valve MS-AOV-86A (containment isolation valve)

This inspection constitutes five surveillance testing samples as defined in Inspection Procedure 71111.22.

Documents reviewed by the inspectors included:

- CR-CNS-2008-02226
- Surveillance Procedure 6.1EE.302, "4160V Bus 1F Undervoltage Relay and Relay Timer Functional Test (DIV 1)," Revision 19
- Surveillance Procedure 6.RCS.601, "Technical Specification Monitoring of RCS Heatup/Cooldown Rate," Revision 15
- Surveillance Procedure 6.2RHR.101, "RHR Test Mode Surveillance Operation (IST) (Division 2)," Revision 22

- Surveillance Procedure 6.MS.201, “Main Steam Isolation Valve Operability Test (IST),” Revision 13

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspector performed an in-office review of Revision 54 to the Cooper Nuclear Station Emergency Plan, submitted March 11, 2008. This revision removed self-contained breathing apparatus from the inventory of equipment stored in the Communications Building (former on-site emergency operations center).

This was compared 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 was conducted according to 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 changes to their emergency plan, therefore these plans are subject to future inspection.

This inspection constitutes one sample as defined in Inspection Procedure 71114.04.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on June 18, 2008, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations (EROs) in the simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

This inspection constitutes one sample as defined in Inspection Procedure 71114.06.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspector used the requirements in 10 CFR Part 20, the TSs, and the licensee's procedures required by TS as criteria for determining compliance. During the inspection, the inspector interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspector performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas in the Reactor, Turbine, Radwaste Buildings, and Multipurpose Facility
- Radiation work permits, procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personal dosimeter noticeably malfunctions or alarms
- Barrier integrity and performance of engineering controls in two potential airborne radioactivity areas
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem committed effective dose equivalent
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools.
- Self-assessments, audits, licensee event reports (LERs), and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies

- Radiation work permit briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

The inspector completed 21 of the required 21 samples. Documents reviewed during the inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

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

- Site-specific ALARA procedures
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Integration of ALARA requirements into work procedure and radiation work permit documents

- Shielding requests and dose/benefit analyses
- Dose rate reduction activities in work planning
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Workers' use of the low dose waiting areas
- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspector completed 7 of the required 15 samples and 7 of the optional samples. Documents reviewed during the inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES [OA]**

4OA1 Performance Indicator Verification (71151)

.1 Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicators listed below for the 2<sup>nd</sup> Quarter 2007 to 1<sup>st</sup> Quarter 2008. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period.

Licensee performance indicator data were also reviewed against the requirements of Procedure 0-P1-01, "Performance Indicator Program," Revision 16.

- Safety system function failures

This inspection constituted one sample as defined in Inspection Procedure 71151.

b. Findings

No findings of significance were identified.

.2 Cornerstone: Barrier Integrity

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicators listed below for the 2<sup>nd</sup> Quarter 2007 to 1<sup>st</sup> Quarter 2008. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period.

Licensee performance indicator data were also reviewed against the requirements of Procedure 0-P1-01, "Performance Indicator Program," Revision 16.

- RCS specific activity
- RCS leakage

This inspection constituted two samples as defined in Inspection Procedure 71151.

b. Findings

No findings of significance were identified.

.3 Cornerstone: Occupational Radiation Safety

Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspector reviewed licensee documents from July 1, 2007, through March 31, 2008. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's TSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in Nuclear Energy Institute (NEI) 99 02, "Regulatory Assessment Indicator Guideline," Revision 5). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

The inspector completed the required sample (1) in this cornerstone.

.4 Cornerstone: Public Radiation Safety

Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrences

The inspector reviewed licensee documents from July 1, 2007, through March 31, 2008. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

The inspector completed the required sample (1) in this cornerstone.

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems (71152)

.1 Problem Identification and Resolution

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.2 Daily CAP 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 CAP. This review was accomplished through inspection of the station's daily CR packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

### .3 Selected Issue Follow-up Inspection

#### a. Inspection Scope

In order to verify that the licensee has taken corrective actions commensurate with the significance of issues, the inspectors performed an in-depth review of information from the selected CR samples identified below. Attributes considered during the in-depth review of licensee actions associated with individual issues included: accurate identification of the problem in a timely manner; evaluation of operability/reportability issues; consideration of extent of condition, generic implication, common cause, and previous occurrences; classification and prioritization of problem resolution commensurate with its safety significance; identification of root and contributing causes of the problem; identification of corrective actions focused to correct the problem; and completion of corrective actions in a timely manner commensurate with the safety significance of the issue.

- CR-CNS-2008-01352, Failure of 4160V Bus 1F Undervoltage Relay

This inspection constitutes completion of one in-depth problem identification and resolution sample as defined in Inspection Procedure 71152.

#### b. Findings

No findings of significance were identified.

### .4 Semiannual Trend Review

#### a. Inspection Scope

The inspectors completed a semiannual trend review of repetitive or closely related issues that were documented in corrective action documents, corrective maintenance documents, and the control room logs to identify trends that might indicate the existence of more safety significant issues. The inspectors' review covered the 12-month period between May 2007 and May 2008. When warranted, some of the samples expanded beyond those dates to fully assess the issue. The inspectors reviewed the following issues:

- Emergency response organization qualifications
- System green-band issues
- Equipment ground problems
- Instrument air system air leaks
- MR evaluation issues
- Operability reviews
- Risk management

The inspectors compared their results with the results contained in the licensee's routine trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy. Documents reviewed by the inspectors are listed in the attachment.

This review constitutes completion of one semi-annual trend review sample as defined in Inspection Procedure 71152.

b. Findings

The inspectors evaluated the licensee's CAP trending methodology, attended departmental trending meetings, and observed that the licensee had performed detailed reviews of developing issues. In the past 6 months, over 20 CRs were written to evaluate emerging trends. In addition to those trends identified by the licensee, the inspectors noted the following:

- (1) ERO Qualifications: The inspectors reviewed the number of ERO personnel who failed to complete training prior to their qualifications expiring in 2007 and found no adverse trend. This was noted by the inspectors as an adverse trend the previous year along with the licensee who had previously identified this trend during Quality Assurance Audit 06-03, "Emergency Preparedness Plan."

In February 2008, the licensee Quality Assurance Audit, QA Audit 08-01, noted that all individuals currently listed on the ERO were verified to be qualified in the CNS Training Database to their assigned ERO position.

The licensee's Corrective Action & Assessment department identified an emerging adverse performance trend with the emergency preparedness program though the failure to maintain ERO qualifications was noted as only a small portion of the declining performance. The inspectors determined that the licensee had implemented appropriate corrective actions to correct the emergency preparedness adverse trend.

- (2) MR Evaluations: During review of plant equipment failures, the inspectors noted a recent increasing trend in MR functional failure evaluations that were not performed, poorly performed, or performed with inappropriate results.

The inspectors noted that past efforts to improve MR functional failure evaluations were documented in CR-CNS-2006-10459, which found the MR database does not link the equipment properly to the safety functions. This 2006 investigation went back to January 1, 2004, and found five instances where functional failure evaluations were missed. The 2006 corrective actions found and corrected 566 linkage errors in the MR database.

A review of recent functional failure evaluations found additional MR functional failure evaluation issues. When inspectors requested the evaluation of a February 20, 2008, process radiation monitor failure, the licensee found that no evaluation had been performed. The daily review of CRs for equipment failures failed to flag this for evaluation due to a vague CR problem description. The licensee corrected and documented this issue in CR-CNS-2008-03911.

The reactor protection system electronic protection assembly Breaker 1B2 failed to open as required on January 15, 2008. While investigating the extent of the problem, electronic protection assembly Breaker 1B1 failed during testing. This was a failure of an essential function to protect the reactor protection system components from damage; however, this function was initially determined not to

be a functional failure. The inspectors questioned this, prompting the evaluation to be reconsidered, and it was determined to be a functional failure. This issue was documented in CR-CNS-2008-01735 on March 19, 2008.

Emergency DG-2 failed to start January 15, 2008, due to an intermittent electrical signal to the speed sensing circuit. The MR functional failure evaluation determined this to be a functional failure of the emergency diesel upper tier function to provide power to plant equipment required for safe shutdown, but missed a lower tier function to monitor and control system operation until this was pointed out by the inspectors. The licensee performed the additional functional failure evaluation and properly recorded the failure under the lower tier function as well.

The licensee has initiated CR-CNS-2008-04491 to document this adverse trend and investigate the process to ensure there is no failure to recognize a SSC that should be monitored in (a)(1) status.

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

##### .1 Transient due to Loss of Reactor Recirculation (RR) Pump B

###### a. Inspection Scope

The inspectors performed an inspection of a plant transient which occurred on March 20, 2008. The transient was caused by the loss of the RR Pump B due to inadequate maintenance work instructions. This plant transient inspection included a review of the licensee's work control process, drawings for the Pump B breaker control circuits, and a review of the licensee's root cause determination.

Documents reviewed by the inspector included:

- System Operating Procedure 2.2.68.1, "Reactor Recirculation System Operations," Revision 48
- CR-CNS-2008-01741
- CNS Maintenance Order 4547515
- Administrative Procedure 0.40, "Work Control Program," Revision 60

###### b. Findings

Introduction. A self-revealing, Green finding occurred regarding the failure to follow work control procedures required to develop adequate maintenance work instructions on 4160 Volt bus Breaker 1CN control circuit fuses.

Description. On March 20, 2008, the inspectors responded to the control room following a plant transient due to the loss of RR Pump B and the subsequent reduction in reactor recirculation flow. Reactor power decreased to approximately 57 percent. The cause was a planned fuse inspection maintenance activity that pulled the NN fuse in the Breaker 1CN cubicle. Administrative Procedure 0.40, "Work Control Program," requires

the plant impact of planned work to be determined by personnel in the Work Control Center (WCC). During work package development for this maintenance activity, the WCC did not review all associated drawings required to fully understand the effects of the maintenance. The applicable electrical drawings for the Breaker 1CN cubicle were reviewed, but the WCC personnel did not identify an electrical interface with the Breaker 1DN control circuitry. As a result, WCC operators did not review the electrical drawing for the Breaker 1DN, which contained information that pulling the NN fuse in the Breaker 1CN cubicle would trip Breaker 1DN. Without this information, performance of the Breaker 1CN fuse inspection work resulted in 4160 Volt Breaker 1DN cubicle opening, removing both sources of power from RR Pump B, and causing an unplanned power reduction to 57 percent rated thermal power.

The licensee performed appropriate actions to place the plant in single loop operation. Following identification and correction of the cause of the transient, the plant was restored to two loop operation and returned to 100 percent power the evening of March 20, 2008. The inspectors reviewed the root cause analysis for this event in CR-CNS-2008-01741.

Analysis. The failure to follow work control procedures required to develop adequate maintenance work instructions was considered a performance deficiency which affected the Initiating Events Cornerstone and initiated a plant transient. This finding was considered more than minor since it was associated with the Initiating Events cornerstone attribute of human performance and affected the cornerstone objective to limit the likelihood of events that upset plant stability during power operations. Based on the results of a Significance Determination Process, Phase 1 evaluation, the finding was determined to have very low safety significance since it did not contribute to the likelihood of a loss-of-coolant accident, did not contribute to a loss of mitigation equipment, and did not increase the likelihood of a fire or internal or external flood. The cause of this finding is related to the human performance crosscutting component of Work Practices because personnel did not effectively use self-checking techniques while determining the plant impact of the proposed fuse removal [H.4(a)].

Enforcement. None of the components affected by this finding were considered safety related; therefore, no violation of NRC requirements was identified. The licensee entered this finding into their CAP as CR-CNS-2008-01741. This finding is identified as FIN 05000298/2008003-05, "Failure to Follow Work Control Program Procedures."

.2 (Closed) LER 05000298/2007-005, "Inadequate Post-Fire Procedure Could Have Prevented Achieving Safe Shutdown"

On June 14, 2007, during validation of procedures associated with achieving safe shutdown during and after an Appendix R fire, the licensee determined that there was no readily available success path to secure HPCI when required. The postulated scenario involved a fire-induced spurious HPCI initiation that must be terminated within 10 minutes to prevent flooding the main steam lines and disabling both reactor core isolation cooling and the automatic depressurization system, each representing available strategies for achieving hot shutdown. As written, the post-fire procedure steps would not have been sufficient to isolate steam to the HPCI turbine. This event and an associated violation of NRC requirements are described in NRC Inspection Report 05000298/2008007. This LER is closed.

#### 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 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.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On April 2, 2008, a regional 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, who acknowledged the findings. The inspector confirmed that proprietary, sensitive, or personal information examined during the inspection had been returned to the identified custodian.

On April 18, 2008, a regional inspector presented the occupational radiation safety inspection results to Mr. M. Colomb, General Manager for Plant Operations, and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On May 2, 2008, regional inspectors presented the results of the ISI by telephone to Mr. M. Colomb, General Manager of Plant Operations, and other members of licensee management. Licensee management acknowledged the inspection findings. The inspectors also acknowledged review of proprietary material during the inspection which had been or will be returned to the licensee.

On July 15, 2008, the resident inspectors presented the quarterly inspection results to Mr. M. Colomb, General Manager of Plant Operations and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed no proprietary information was examined during the inspection.

#### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and met the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a NCV.

- TS 5.4.1.a commits the licensee to comply with the guidance in Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2. Regulatory Guide 1.33, Appendix A, Paragraph 9a, requires that "maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures appropriate to the circumstances." Contrary to this standard, during Refueling Outage RE24 maintenance was performed on primary containment isolation system (PCIS) Relays PCIS-REL-59 and PCIS-REL-60 using WOs 4541159 and 4541160, which contained insufficient guidance and therefore were not appropriate to the circumstances. These WOs did not specify the PCIS function of the relays, nor did it specify a post-work test to ensure that this essential function was tested after maintenance. The inspectors determined that this issue was of very low safety significance since both relays passed their post-work tests on May 8, 2008, and no loss of system safety function resulted from the performance deficiency.

**SUPPLEMENTAL INFORMATION  
KEY POINTS OF CONTACT**

Licensee

J. Austin, Emergency Planner Manager  
M. Bergmeier, Operations Support Group-Supervisor  
V. Bhardwaj, Manager, Engineering Support  
M. Boyce, Director of Projects  
D. Buman, System Engineering-Manager  
S. Charbonnet, NDE Coordinator, Engineering Support  
M. Colomb, General Manager of Plant Operations  
A. Conti, NDE Level III, Areva  
R. Estrada, Manager, Corrective Action and Assessments  
S. Domikaitis, Mechanical Design-Supervisor  
K. Done, Senior Staff Engineer  
J. Ehlers, System Engineer-SED  
O. Olson, ESD-Risk Management  
R. Estrada, Manager-Corrective Action  
K. Fike, Chemistry Operations Supervisor  
J. Flaherty, Senior Staff Licensing Engineer  
P. Fleming, Director of Nuclear Safety Assurance  
G. Gardner, Civil Design Supervisor-Design Engineering  
G. Horn, Engineering Specialist-Design Engineering  
G. Kline, Director of Engineering  
G. Levy, Mechanical Engineer  
D. Madsen, Licensing Engineer  
T. McClure, ISI Engineer, Engineering Support  
R. McDonald, Staff Health Physicist  
M. Metzger, System Engineer-SED  
E. McCutchen, Senior Licensing Engineer  
E. Nelson, Electrical Design Engineer  
W. Persinger, ISI Task Lead, Areva  
R. Rexroad, Electrical System Engineer  
S. Freborg, Valve Group Supervisor-ESD  
D. Sealock, Manager, Training  
J. Smith, Welding Coordinator, Maintenance  
T. Stevens, Manager-Design Engineering  
M. Unruh, Senior Staff Engineer  
D. VanDerKamp, Manager-Licensing  
M. VanWinkle, Electrical Supervisor-Design Engineering  
D. Werner, Operations Training-Supervisor

Nuclear Regulatory Commission

K. Heck, Quality & Vendor Branch, DCIP/NRO

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000298/2008003-02    URI    Misaligned Lubricating Oil Piping Causes DG 2 Failure  
(Section 1R12)

### Opened and Closed

05000298/2008003-01    NCV    Failure to Notify the NRC of the Inability to Meet ASME  
Code Requirements (Section 1R08)

05000298/2008003-03    NCV    Failure to Properly Manage Elevated Risk (Section 1R13)

05000298/2008003-04    NCV    Failure to Construct Drywell Shielding According to Design  
Documents (Section 1R18)

05000298/2008003-05    FIN    Failure to Follow Work Control Program Procedures  
(Section 4OA3)

### Closed

05000298/2007-005-01    LER    Inadequate Post Fire Procedure Could Have Prevented  
Achieving Safe Shutdown (Section 4OA3)

## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### Section 1R08: Inservice Inspection Activities

#### Procedures

NUMBER	TITLE	REVISION
01-07384	Underwater Visual Inspection of Coating and Containment Surfaces	1
3.4.5	Risk Informed – Inservice Inspection Procedure	10C1
3.28	Risk Informed – Inservice Inspection Procedure	23
3.28.1	Inservice Inspection Program implementation	11
3.28.1.1	Visual VT-1 Examination of Pressure Retaining Bolting and Integral Attachments	7

NUMBER	TITLE	REVISION
3.28.1.2	Weld Preparation and Marking for ISI	5
3.28.1.3	VT-3 Visual Examination of Pump Casings and Valve Bodies	7
3.28.1.4	General Visual Examination of Containment Surfaces	5
3.28.1.5	Visual Examination of Containment Surfaces, VT-1/3	4
3.28.1.6	Visual Examination of Bolting	3
7.0.8	Pressure Testing	25
7.0.8.1	System Leakage Testing	21
54-ISI-30-06	Written Practice for the Qualification and Certification of NDE Personnel	6
54-ISI-69-28	Administrative Procedure for Processing Nondestructive Examination Data	28
54-ISI-112-13	Ultrasonic Examination for Thickness Measurement Using Pulse-Echo Techniques	13
54-ISI-135-08	Linearity and Beam Spread Measurements	8
54-ISI-136-07	Procedure for Ultrasonic Examination of Vessels not Greater than 2.0 Inches in Thickness	7
54-ISI-147-01	Ultrasonic Examination for Thickness Measurement Using Pulse-Echo Techniques	1
54-ISI-159-08	Remote Ultrasonic Examination of Jet Pump Hold Down Beams	8
54-ISI-173-04	ASME Section XI Examination Coverage	4
54-ISI-240-44	Visible Solvent Removable Liquid Penetrant Examination Procedure	44
54-ISI-270-44	Wet or Dry Magnetic Particle Examination Procedure	44
54-ISI-363-04	Remote Underwater Visual Inspection of Reactor Pressure Vessel Internals, Components, and Associated Repairs in Boiling Water Reactors	4
54-ISI-369-02	Procedure for VT-1 and VT-3 Visual Examinations	2
54-ISI-602-01	Procedure for the Remote Ultrasonic Examination of BWR Reactor Vessel Internal Jet Pump Diffuser, Adaptor, and Mixer Welds	1
54-ISI-606-01	Automated UT Depth Sizing of Similar Metal Piping Welds	1

NUMBER	TITLE	REVISION
54-ISI-805-06	Procedure for the Ultrasonic Examination of Reactor Pressure Vessel Welds	6
54-ISI-806-02	Procedure for the Manual Ultrasonic Through-Wall Length Sizing of Ultrasonic Indications in Reactor Pressure Vessel Welds	2
54-ISI-829-08	Manual Ultrasonic Examination of Dissimilar Metal Piping Welds	8
54-ISI-835-12	Ultrasonic Examination of Ferritic Piping Welds	12
54-ISI-836-11	Ultrasonic Examination of Austenitic Piping Welds	11
54-ISI-837-09	Ultrasonic Through Wall Sizing of Piping Welds	9
54-ISI-838-09	Manual Ultrasonic Examination of Weld Overlaid Material	9
54-ISI-850-06	Manual Ultrasonic Examination of BWR Reactor Vessel Nozzle Inner Radius Regions and Nozzle to Shell Welds (inner 15%)	6
54-ISI-856-02	Automated Ultrasonic Depth Sizing of Dissimilar Metal Piping Welds	2
54-ISI-857-02	Automated Ultrasonic Examination of Dissimilar Metal Piping Welds	2
54-ISI-860-00	Procedure for Encoded, Manually Driven, Phased Array UT Examination of Dissimilar Metal Piping Welds	0
54-ISI-861-01	Procedure for Encoded Manually Driven, Phased Array UT Flaw Detection and Length Sizing in Ferritic and Wrought Austenitic Welds	1
54-ISI-863-00	Procedure for the UT Detection and Sizing of Reactor Pressure Vessel Welds and Inner Radius (PDI-UT-11)	0
6.MISC.502	ASME Class 1 System Leakage Test	23

Miscellaneous

NUMBER	TITLE	REVISION
LO-CNSLO-2007-00286 CA-1	Snapshot Assessment/Benchmark: CNS Fourth 10 Year Inservice Inspection Program	1
SA-03037	Welding and Repair/Replacement Program Interface Assessment	November 10, 2003

NUMBER	TITLE	REVISION
Relief Request RI-02	Use of Existing Calibration Blocks for Ultrasonic Examination of Class 1 and Class 2 Components	0
Relief Request RI-29	Reactor Pressure Vessel Reactor Circumferential Shell Welds	0
Relief Request RI-34	Risk Informed Inservice Inspection	2
Ultrasonic Examination R-196	NVE-BD-N3A Nozzle to Vessel	
Ultrasonic Examination B3.90.0013	NVE-BD-N3A Nozzle to Vessel	
Ultrasonic Examination B9.11.0215.R1	FWD-BJ-38R1 18" Valve to Tee	
Ultrasonic Examination B9.11.0173.R1	FWA-BJ-44R1 Valve to Pipe Weld	
Ultrasonic Examination B9.11.0212.R1	FWD-BJ-31R1 Pipe to Valve Weld	
Ultrasonic Examination B9.11.0211.R1	FWD-BJ-30R1 Valve to Elbow Weld	
Ultrasonic Examination B9.11.0170.R1	FWA-BJ-33R1 Pipe to Valve Weld	
Ultrasonic Examination B9.11.0169.R1	FWA-BJ-31R1 Valve to Elbow Weld	

Condition Reports

CR-CNS-2008-02546	CR-CNS-2008-02714	CR-CNS-2008-02727
CR-CNS-2008-02700	CR-CNS-2008-02719	CR-CNS-2008-02783

Work Orders

4508474	4358881	4321730
4160090	4321729	4321732
4432802	4321731	4426440

Section 1R19: Post Maintenance Testing

Condition Reports

CR-CNS-2008-03551                      CR-CNS-2008-03522

Procedures

SURVEILLANCE PROCEDURE	TITLE	REVISION
6.2DG.103	Diesel Generator 18 Month Operability Test (IST) (DIV 2)	34
6.2RHR.101	RHR Test Mode Surveillance Operation (IST) (DIV 2)	22
6.MISC.502	ASME Class 1 System Leakage Test	30

Work Orders

WO 4541159                      WO 4574405                      WO 4627442  
WO 4546155                      WO 4576832                      WO 4627555

Section 2OS1: Access Controls to Radiologically Significant Areas (71121.01)

Audits and Self-Assessments

Radiation Protection Fundamentals Corporate Assessment on February 22, 2008  
Radiological Department On-Going Assessment Report 4Q2007

Condition Reports

CR-CNS-2007-5248                      CR-CNS-2008-0477                      CR-CNS-2008-1849  
CR-CNS-2007-5297                      CR-CNS-2008-0493                      CR-CNS-2008-1912  
CR-CNS-2007-5728                      CR-CNS-2008-1297                      CR-CNS-2008-2476  
CR-CNS-2007-7471                      CR-CNS-2008-1730                      CR-CNS-2008-2502

Procedures

NUMBER	TITLE	REVISION
9.EN-RP-101	Access Control for Radiologically Controlled Areas	0
9.EN-RP-108	Radiation Protection Posting	0
9.EN-RP-141	Job Coverage	0
9.EN-RP-151	Radiological Diving	0
9.ENN-RP-102	Radiological Control	0
9.ENN-RP-106-1	Radiation and Contamination Surveys	5

9.INST.14	Tennelec Eclipse LB Operation	0
9.INST.32	Tennelec LB-4100 Drawer Smear Counter	1
9.INST.33	Tennelec LB-5100 II and APC II Operation	2
9.RADOP.2	Radiation Safety Standards and Limits	11

Radiation Work Permits

2008-005	2008-430	2008-443
2008-073	2008-431	2008-444
2008-401	2008-432	

Miscellaneous

Internal Dose Assessments for Five Workers  
 Radiologically Controlled Area Accumulated Dose Entries for Selected Individual Workers  
 Reactor, Turbine, and Radwaste Building and Multipurpose Facility Surveys  
 Drywell and Torus Prejob Surveys

Section 2OS2: ALARA Planning and Controls (71121.02)

Audits and Self-Assessments

CR-CNS-2007-05297 CA-4  
 CR-CNS-2007-05297 CA-5  
 QAD 20070053  
 Radiation Protection Fundamentals Corporate Assessment on February 22, 2008

ALARA Package

2008-450

Condition Reports

CR-CNS-2007-5201	CR-CNS-2007-8295	CR-CNS-2008-1497
CR-CNS-2007-5266	CR-CNS-2008-1149	CR-CNS-2008-1502
CR-CNS-2007-7167	CR-CNS-2008-1297	

Procedures

NUMBER	TITLE	REVISION
9.ALARA.4	Radiation Work Permits	9
9.ALARA.5	ALARA Planning and Controls	19
9.EN-RP-110	ALARA Program	2

Radiation Work Permits

2008-401	2008-430	2008-431	2008-432
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Shielding Requests

Temporary Shielding Package 08-05

Miscellaneous

Drywell and Torus pre-job surveys

Section 4OA1: Performance Indicator Verification (71151)

Condition Reports

CR-CNS-2007-5728	CR-CNS-2007-7642	CR-CNS-2008-2502
CR-CNS-2007-5748	CR-CNS-2008-2476	

Procedure

NUMBER	TITLE	REVISION
0-PI-01	Performance Indicator Program	0

Miscellaneous

EFFECTS Gaseous and Liquid Effluent Dose Evaluations  
Procedure 0-PI-01, Attachment 7, PI Documentation Data Review Forms

Section 4OA2: Problem Identification and Resolution

Condition Reports

CR-CNS-2008-00138	CR-CNS-2008-01017	CR-CNS-2008-01869
CR-CNS-2008-00491	CR-CNS-2008-01583	CR-CNS-2008-04491

Trend Reports

CNS Equipment Trend Reports, November 2007 through April 2008  
CNS CAP Trend Reports for January 2008, February 2008, and March 2008

## LIST OF ACRONYMS USED

AC	alternating current
ADAMS	Agency Documents Access & Management System
AES	Automated Engineering Services
ALARA	as-low-as-is-reasonably-achievable
ASME	American Society of Mechanical Engineers
BWR	boiling water reactor
CAP	corrective action program
CED	change evaluation document
CFR	Code of Federal Regulations
CNS	Cooper Nuclear Station
DG	diesel generator
ERO	emergency response organization
HPCI	high pressure coolant injection
IR	inspection Report
ISI	in-service inspection
kV	kilovolt
LER	licensee event report
MR	maintenance rule
NCV	noncited violation
NRC	U.S. Nuclear Regulatory Commission
PARS	publicly available records system
PCIS	primary containment isolation system
QA	quality assurance
RCS	reactor coolant system
RHR	residual heat removal
RR P-B	reactor recirculation Pump B
SSC	systems, structures, and components
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	unresolved item
WCC	work control center
WO	work order