



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

November 7, 2011

EA 11-236

Brian J. O'Grady, Vice President-Nuclear
and Chief Nuclear Officer
Nebraska Public Power – Cooper
Nuclear Station
72676 648A Avenue
Brownville, NE 68321

Subject: COOPER NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
NUMBER 05000298/2011004

Dear Mr. O'Grady:

On September 23, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on September 29, 2011, with you and other members of your staff.

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

Based on the results of this inspection, the NRC has identified seven issues that were evaluated under the risk significance determination process as having very low significance (Green).

Also, based on the results of this inspection, a licensee-identified issue was discovered that involved a violation of NRC requirements. This 10 CFR 50, Appendix R-related issue, discussed in Section 4OA3, was screened and determined to warrant enforcement discretion per the NRC Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48).

These violations were evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>).

If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C.

20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the facility. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at the facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Sincerely,

/RHagar for/

Vince Gaddy, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DRP-46

Enclosure:
NRC Inspection Report 05000298/2011004
w/Attachment: Supplemental Information

cc w/Enclosure: Distribution via Listserv

Electronic distribution by RIV:
 Regional Administrator (Elmo.Collins@nrc.gov)
 Deputy Regional Administrator (Art.Howell@nrc.gov)
 DRP Director (Kriss.Kennedy@nrc.gov)
 DRP Deputy Director (Troy.Pruett@nrc.gov)
 DRS Director (Anton.Vegel@nrc.gov)
 DRS Deputy Director (Tom.Blount@nrc.gov)
 Senior Resident Inspector (Jeffrey.Josey@nrc.gov)
 Resident Inspector (Michael.Chambers@nrc.gov)
 Branch Chief, DRP/C (Vincent.Gaddy@nrc.gov)
 Senior Project Engineer, DRP/C (Bob.Hagar@nrc.gov)
 Project Engineer, DRP/C (Rayomand.Kumana@nrc.gov)
 CNS Administrative Assistant (Amy.Elam@nrc.gov)
 Public Affairs Officer (Victor.Dricks@nrc.gov)
 Public Affairs Officer (Lara.Uselding@nrc.gov)
 Project Manager (Lynnea.Wilkins@nrc.gov)
 Branch Chief, DRS/TSB (Dale.Powers@nrc.gov)
 RITS Coordinator (Marisa.Herrera@nrc.gov)
 Regional Counsel (Karla.Fuller@nrc.gov)
 Congressional Affairs Officer (Jenny.Weil@nrc.gov)
 OEmail Resource
 ROPreports
 OEDO RIV Coordinator (Mark.Franke@nrc.gov)
 DRS/TSB STA (Dale.Powers@nrc.gov)

SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	VGG
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	VGG
SRI:DRP/PBC	RI:DRP/PBC	C:DRS/EB1	C:DRS/EB2	C:DRS/OB	
JJosey	MChambers	TRFarnholtz	NFO'Keefe	MHaire	
/RHagar for/	/VGaddy for/	/RA/	/SGraves/	/RA/	
11/7/11	11/4/11	10/24/2011	11/4/11	10/21/2011	
AC:TSS	C:DRS/PSB1	C:DRS/PSB2	C:DRP/C	C:DRP/SPE	
DPowers	MHay	GEWerner	V.Gaddy	BHagar	
/RA/	/RA/	/RA/	/RHagar for/	/RA/	
10/24/2011	10/26/2011	10/24/2011	11/7/11	11/3/11	
ACES					
RKellar					
/RA/					
11/7/11					

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000298
License: DRP-46
Report: 05000298/2011004
Licensee: Nebraska Public Power District
Facility: Cooper Nuclear Station
Location: 72676 648A Ave
Brownville, NE 68321
Dates: June 24 through September 23, 2011
Inspectors: J. Josey, Senior Resident Inspector
M. Chambers, Resident Inspector
N. Okonkwo, Reactor Inspector
Approved By: Vince Gaddy, Chief, Project Branch C
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000298/2011004; 06/24/2011 – 09/23/2011; Cooper Nuclear Station, Integrated Resident and Regional Report; Maintenance Effectiveness, Maintenance Risk Assessments and Emergent Work Control, Identification and Resolution of Problems, Event Follow-up.

The report covered a 3-month period of inspection by resident. Seven Green noncited violations of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a noncited violation of 10 CFR 50.65 (a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the failure of the licensee to adequately assess and manage the increase in risk associated with maintenance activities. Specifically, on May 31, 2011, licensee personnel failed to adequately assess and manage the increase in risk associated with a large trailer parked close to the 161kV line tower in the transformer yard area. This finding was entered into the licensee's corrective action program as condition reports CR-CNS-2011-01439.

This finding is more than minor because it affected the protection against external factors attribute of the Initiating Events Cornerstone, and directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used due to the licensee's inability to quantify the increase in risk associated with the heavy equipment near an offsite power tower. The inspectors utilized Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," to determine that the finding was of very low safety significance because other qualified sources of offsite power (the emergency and main transformers) provided sufficient remaining defense in depth in the event of a loss of offsite power to the station transformer. This finding had a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee failed to adequately define and effectively communicates expectations regarding procedural compliance and personnel failed to follow procedures [H.4(b)] (Section 1R13).

- Green. The inspectors identified a noncited violation of 10 CFR 50.65 (a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power

Plants,” for the failure of the licensee to adequately assess and manage the increase in risk associated with maintenance activities. Specifically, on June 3, 2011, the licensee failed to assess and manage the risk associated with leak injection work on a steam supply piping flange to the reactor feed pump. This finding was entered into the licensee’s corrective action program as condition reports CR-CNS-2011-09308, CR-CNS-2011-06363 and CR-CNS-2011-09452.

This finding is more than minor because it affected the protection against external factors attribute of the Initiating Events Cornerstone, and directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that Manual Chapter 0609, Appendix K, “Maintenance Risk Assessment and Risk Management Significance Determination Process,” could not be used due to the licensee’s inability to quantify the increase in risk associated with the heavy equipment near an offsite power tower or the possibility of a reactor feed pump trip due to work in the area. The inspectors utilized Manual Chapter 0609, Appendix M, “Significance Determination Process Using Qualitative Criteria,” to determine that the finding was of very low safety significance because there was a second reactor feed pump running that would have limited a plant transient. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)](Section 1R13).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR 50.65 (a)(2), requirements for monitoring the effectiveness of maintenance at nuclear power plants. Specifically the licensee failed to demonstrate that the performance of the essential service water strainer backwash system was effectively controlled through appropriate preventive maintenance. As a result, the licensee did not establish goals or monitor the performance of the essential strainers per 10 CFR 50.65 (a)(1) to ensure appropriate corrective actions were initiated following repeated failures of the strainer automatic backwash system. The licensee entered this issue in their corrective action program as Condition Report CR-CNS-2011-09030.

This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed an Inspection Manual Chapter 0609, Attachment 4, Phase 1 Initial Screening and Characterization of Findings, and determined that the finding was of very low safety significance (Green) because the maintenance rule aspect of the finding did not cause an actual loss of safety function of the system nor did it cause a component to be inoperable. This finding had a cross-cutting aspect in the area of human performance associated with the resources component because the procedure used to perform functional failure evaluations

was not complete, accurate, or up-to-date because it did not identify that automatic service water strainer backwash was an essential function [H.2(c)] (Section 1R12).

- Green. The inspectors identified two examples of a noncited violation of 10 CFR 50.65 (b)(2) for the licensee's failure to monitor nonsafety-related components whose failure could prevent safety-related systems from fulfilling their safety-related function. Specifically, the licensee did not include reactor building quad sump drains components that could prevent internal flooding from affecting essential equipment in the quads nor did the licensee include steam exclusion doors whose failure could affect essential equipment in the scope of the maintenance rule monitoring program specified in 10 CFR 50.65 (a)(1). Licensee personnel entered this issue in the corrective action program as Condition Reports CR-CNS-2011-05251 and CR-CNS-2011-02021.

The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed an Inspection Manual Chapter 0609, Attachment 4, Phase 1 Initial Screening and Characterization of Findings, and determined that the finding was of very low safety significance (Green) because the maintenance rule aspect of the finding it is not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of a single train system for greater than the Technical Specification allowed outage time, and was not made risk-significant because of external events. The finding does not have a cross-cutting aspect since the failure to scope this equipment into the maintenance rule was not recognized during the initial maintenance rule scoping activities (Circa 1996) and, as a result, is not indicative of current licensee performance (Section 1R12).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to implement adequate corrective actions to preclude recurrence of a significant condition adverse to quality. Specifically, during the root cause evaluation performed for a previous issue where a hazard barrier was disabled which resulted in the inoperability of both emergency diesel generators, the licensee failed to adequately implement corrective actions to prevent recurrence of this significant condition adverse to quality. This resulted in multiple repeat instances where the licensee breached hazard barriers for routine monthly maintenance from October 2010 through March 2011, without either; assessing the risk incurred to the station, declaring the protected equipment inoperable, or providing an equivalent level of protection for the equipment being protected by the barriers. This issue was entered into the licensee's corrective action program as Condition Reports CR-CNS-2011-0684 and CR-CNS-2011-9217.

The failure to implement adequate corrective actions to preclude recurrence of a significant condition adverse to quality was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone,

and affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the finding: (1) was not a design or qualification issue confirmed not to result in a loss of operability or functionality; (2) did not represent an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component, in that, the licensee failed to; 1) thoroughly evaluate problems such that the resolutions addressed causes, and 2) for significant conditions, conduct effectiveness reviews of corrective actions to ensure that the problems were resolved [P.1(c)] (Section 4OA3).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion VII, Control of Purchased Material, Equipment, and Services, associated with the licensee's failure to have adequate receipt inspection procedures to establish measures to assure that purchased material, equipment, and services conform to the procurement documents. Specifically, using the station procedure for the receipt inspection of the essential motor for the residual heat removal service water booster pump, the licensee failed to identify loose bearing cap bolting. The motor was subsequently installed in the plant for ten months before the degraded condition was identified. The licensee entered this issue into their corrective action program with CR CNS 2011-04643. Corrective actions resulted in revised receipt inspection requirements.

The failure to have adequate receipt inspection procedures to establish measures to assure that purchased material, equipment, and services conform to procurement documents is a performance deficiency. The performance deficiency was more than minor because it adversely impacts the equipment performance attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding screened as potentially risk significant since the finding represents an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time. When evaluated per Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," and the Cooper Phase 2 pre-solved table item, "One RHRSWBP," the inspectors determined this finding to be potentially risk significant. The finding was forwarded to a senior reactor analyst for review. The senior reactor analyst performed the Phase 3 analysis and determined that the finding was of very low safety significance. This finding did not have a cross-cutting aspect since the receipt inspection took place greater than three years ago and, therefore, the finding is not reflective of current performance (Section 4OA3).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self revealing, noncited violation of Technical Specification 5.4.1, resulting from a plant individual who failed to follow radiation work permit requirements and was contaminated as a result. The condition was detected when the contamination monitor alarmed during the individual's attempt to process out of the radiologically controlled area. The individual was then decontaminated prior to exiting. The licensee entered the issue into the corrective action program as Condition Report CR-CNS-2011-8582.

The failure to follow radiation work permit requirements is a performance deficiency. The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, working outside the scope of the radiation work permit resulted in personnel contamination and contamination levels in the area had the potential to increase personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding has a human performance cross-cutting aspect associated with the work practices component, when the licensee failed to assure that human error prevention techniques, such as self checking, are used to assure that work activities are performed safely when an individual failed to self check requirements prior to entering the radiation controlled area and was contaminated [H.4(a)](Section 4OA2).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Cooper Nuclear Station began the inspection period at full power on June 24, 2011, and remained at essentially full power through the end of the inspection period, September 23, 2011.

On June 19, 2011, the licensee entered a Notice of Unusual Event due to high Missouri River water level. On July 12, 2011, the licensee exited the Notice of Unusual Event when river level decreased below the entry criteria.

1. REACTOR SAFETY

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

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- July 13, 2011, Cooper area levees during Missouri River flood conditions
- August 3, 2011, Service water pumps and intake screens during lowering river flood conditions
- September 23, 2011, Service water Zurn strainer blowdown valve temporary modification

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

corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On September 13, 2011, the inspectors performed a complete system alignment inspection of the diesel generator 1 during diesel generator 2 maintenance outage to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

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

- July 12, 2011, Reactor building 903 foot elevation level

- September 8, 2011, Impeded access to protected area yard fire hose stations by security barriers
- September 20, 2011, Main transformer yard area
- September 23, 2011, Service water intake structure, Zone 20A and 20B

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

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

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On September 20, 2011, the inspectors observed fire brigade activation for a station drill that involved a fire in the yard area at the station's startup service transformer. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of preplanned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives.

These activities constitute completion of one annual fire-protection inspection sample as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- July 11, 2011, Inspection of manhole 6A

These activities constitute completion of one bunker/manhole sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On September 20, 2011, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms

- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

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

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- August 17, 2011, Reviewed loss of Zurn strainer auto backwash functional failure evaluations
- September 19, 2011, Steam exclusion boundary doors and reactor building sump float switches

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

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65 (b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance

- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65 (a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65 (a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65 (a)(1)

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

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

b. Findings

(1) Failure to Place the Essential Service Water System Strainers in 10 CFR 50.65 (a)(1)

Introduction. The inspectors identified four examples of a noncited violation of 10 CFR 50.65 (a)(2), requirements for monitoring the effectiveness of maintenance at nuclear power plants. Specifically, the licensee failed to demonstrate that the performance of the essential service water strainer backwash system was effectively controlled through appropriate preventive maintenance. As a result, the licensee did not establish goals or monitor the performance of the essential strainers per 10 CFR 50.65 (a)(1) to ensure appropriate corrective actions were initiated following repeated failures of the strainer automatic backwash system.

Description. The inspectors performing baseline Inspection Procedure IP 71111.12, "Maintenance Effectiveness," selected the service water strainer automatic backwash failures to review based on their risk significance and frequent problems. A review of four functional failures failure evaluations, listed below, found that in all four examples the licensee had inappropriately credited manual operator backwash actions to justify function of the strainers on failure of the design basis automatic backwash function.

Functional Failure Evaluations of Function SW-FW01: Supply Service Water to Common Header

- September 2, 2008 Notification 10613783
- April 29, 2009 Notification 10660425
- May 1, 2009 Notification 10661069
- March 27, 2010 Notification 10723748

The function of the service water strainers is to trap and retain trash and debris to prevent clogging of safety-related heat exchangers and other equipment supplied by the system. This strainer function is performed by a screen mesh in the flow stream. To prevent the screen from becoming plugged, a backwash function is incorporated into the strainer. An automated motorized backwash system removes the built-up material from the strainer screen. If the automatic backwash of the strainer fails, material will build up on the screen and prevent service water flow to downstream safety-related components.

The licensee performance criteria for the maintenance rule automatic strainer backwash function is one functional failure or repeat maintenance-preventable functional failure. The one functional failure requirement was met September 2, 2008, and required an (a)(1) maintenance rule evaluation. Each subsequent failure also required an (a)(1) evaluation. The licensee process uses the (a)(1) maintenance rule evaluation to determine monitoring, goals and corrective actions required to demonstrate effective maintenance and reliability of the function and return to (a)(2) status.

On August 23, 2011 the inspectors informed the licensee that the failure to monitor the service water automatic strainer backwash system per 10 CFR 50.65 (a)(1) resulted in the Cooper Station being in violation of 10 CFR 50.65 (a)(2) due to four incorrect functional failure evaluations. The licensee initiated CR-CNS-2011-09030 that determined that the four incorrect functional failure evaluations were due to evaluators having a knowledge gap on the issue of crediting operator actions and that the evaluation process was not updated with the essential automatic operation function of the system. The evaluation process, i.e., the procedure used to perform the evaluations was not complete, accurate, and up-to-date, without the information that automatic service water backwash was an essential function. Corrective actions include updating the process and additional training.

The licensee performed a root cause CR-CNS-2010-2213 that determined the four repetitive failures were due to the same root cause, a design flaw in the automatic drive gear coupling and has corrected the design flaw. An additional unrelated strainer backwash functional failure occurred August 15, 2011 and is documented in CR-CNS-2011-8812.

Analysis. The inspectors determined that the licensee's failure to properly evaluate maintenance rule functional failures resulting in the system remaining in an (a)(2) status instead of the required (a)(1) status was a performance deficiency. This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed an Inspection Manual Chapter 0609, Attachment 4, Phase 1 Initial Screening and Characterization of Findings, and determined that the finding was of very low safety significance (Green) because the maintenance rule aspect of the finding did not cause an actual loss of safety function of the system nor did it cause a component to be inoperable. This finding had a cross-cutting aspect in the area of human performance associated with the resources component because the procedure used to perform functional failure evaluations was not complete, accurate, or up-to-date because it did not identify that automatic service water strainer backwash was an essential function. [H.2(c)].

Enforcement. 10 CFR 50.65 (a)(1) requires, in part, that holders of an operating license shall monitor the performance of systems and components against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components are capable of fulfilling their intended safety functions. 10 CFR 50.65 (a)(2) states, in part, that monitoring as specified in 10 CFR 50.65 (a)(1) is not required where it has been demonstrated that the performance of a system is being effectively controlled through the performance of appropriate preventive maintenance, such that the system remains capable of performing its intended function. Contrary to this requirement, from September 2, 2008 to the present, the licensee did not demonstrate that the performance of the service water strainer backwash system had been effectively controlled through maintenance and did not monitor against licensee established goals to assure that the essential service water system was capable of fulfilling its intended safety functions. Specifically, the licensee failed to identify and properly account for maintenance preventable functional failures that occurred September 2, 2008, April 29, 2009, May 1, 2009, and March 27, 2010, that demonstrated that the performance of the essential service water system was not being effectively controlled through maintenance and, as a result, that goal setting and monitoring was required. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as CR-CNS-2011-09030, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011004-01, "Failure to Place the Essential Service Water System Strainers in 10 CFR 50.65 (a)(1)."

(2) Failure to Scope Reactor Building Drain Components and Steam Exclusion Doors that Affect Safety-Related Systems in the Maintenance Rule Monitoring Program

Introduction. The inspectors identified two examples of a Green noncited violation of 10 CFR 0.65 (b)(2) for the licensee's failure to monitor nonsafety-related components whose failure could prevent safety-related systems from fulfilling their safety-related function. Specifically, within in the scope of the maintenance rule monitoring program specified in 10 CFR 65 (a)(1), the licensee did not include either reactor building quad sump drain components that could prevent internal flooding from affecting essential equipment, or steam exclusion doors whose failure could affect essential equipment.

Description. The first example was identified during an inspection of the facility's capabilities to respond to an internal flooding event (NRC Inspection Report NCV 05000298/2011003-01, "Failure to Assess Potential Adverse Effects on Internal Flooding Analysis," that called into question the reactor building floor drains effect on safety-related equipment during an internal flooding event.) For the second example, inspectors identified that the licensee performed maintenance on steam exclusion doors that made them inoperable without recognizing the condition (NRC Inspection Report NCV 05000298/2011004-07, "Failure to Prevent Recurrence of a Significant Condition Adverse to Quality"). The licensee investigation in response to inspectors questions determined the doors were not properly scoped in the maintenance rule.

The inspector's review of the reactor building drain system found that air operated drain valves would divert the normal drain path from the reactor building quad sumps to the torus area to limit excessive flood height in the quads as a result of a line break event outside of primary containment. The rectangular reactor building has each corner walled

off into separate rooms called reactor building quads. The lower levels of the quads contain safety-related emergency core cooling equipment such as the core spray pumps, residual heat removal pumps, high-pressure coolant injection pumps and a sump and pump to remove normal water accumulation. The failure of the non-essential air operated reactor building drain valves and the associated quad sump tank high-level switches that actuate them could adversely affect the safety-related equipment in the lower quad levels. Based on identification of the need for the functionality of the drain valves to protect safety-related equipment, and knowledge that the Maintenance Rule scoping document did not identify the drain components as serving a Maintenance Rule function, the inspectors questioned how they were being controlled and what type of preventative maintenance was being performed on them. Licensee personnel entered this issue into the corrective action program as Condition Report CR-CNS-2011-05251. Corrective actions will create new maintenance rule functions to monitor these quad drain components. This action includes a historical data review to determine the effectiveness of maintenance for the quad drain components.

In the second example, during a walkdown to the control room the inspectors found a steam exclusion barrier door blocked open to support maintenance activities. Part of the licensee response to address inspector questions and restore compliance was revision of the licensee Procedure 0.16, "Control of Doors." During review of the maintenance rule database for impacts to the procedure change it was determined that the steam exclusion doors function was not being monitored by the maintenance rule. The steam exclusion function of these doors is to prevent steam from a high energy line break accident from damaging safety-related equipment and in the case of the control room doors, protect operations personnel from injury. Condition Report CR-CNS-2011-02021 created corrective actions to add the steam exclusion boundary doors to the applicable building maintenance rule functions or create a new maintenance rule function for steam exclusion boundary doors.

Analysis. The inspectors determined that the failure of the licensee to effectively monitor the performance of the reactor building floor drain components and steam exclusion doors in accordance with 10 CFR 50.65 (a)(1) was a performance deficiency. The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed an Inspection Manual Chapter 0609, Attachment 4, Phase 1 Initial Screening and Characterization of Findings, and determined that the finding was of very low safety significance (Green) because the maintenance rule aspect of the finding it is not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of a single train system for greater than the Technical Specification allowed outage time, and was not made risk-significant because of external events. The finding does not have a cross-cutting aspect because the failure to scope this equipment into the maintenance rule was not recognized during the initial maintenance rule scoping activities (Circa 1996) and, as a result, is not indicative of current licensee performance.

Enforcement. 10 CFR 50.65 (b)(2) requires, in part, that the scope of the monitoring program specified in paragraph (a)(1) include non-safety related structures, systems, and components whose failure could prevent safety-related structures, systems, and

components from fulfilling their safety-related function. Contrary to the above, from initial maintenance rule scoping in 1996 to the present, the reactor building quad sump drains components and steam exclusion doors were not included in the scope of the monitoring program specified in 10 CFR 50.65 (a)(1). The inclusion of the reactor building quad sump components and the steam exclusion doors in the scope of the monitoring program is necessary because failure of those systems could prevent multiple safety-related systems from fulfilling their safety-related functions. Because the finding was of very low safety significance and has been entered into the licensee's corrective action program as Condition Reports CR-CNS-2011-05251 and CR CNS 2011 02021, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000298/2011004-02, "Failure to Scope Reactor Building Drain Components and Steam Exclusion Doors that Affect Safety-Related Systems in the Maintenance Rule Monitoring Program."

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

a. Inspection Scope

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

- August 5, 2011, Emergent work for reactor feed pump 1B high pressure stop valve, MS-V-53 steam leak repair
- August 16, 2011, Emergent work on the Zurn strainer pinch valve CNS-1-SW-AOV-857AV failure
- August 30, 2011, Reactor core isolation cooling maintenance window
- September 14, 2011, Reschedule of Yellow risk maintenance on diesel generator 2 hand valve exhaust fan

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

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

b. Findings

- .1 Introduction. The inspectors identified a noncited violation of 10 CFR 50.65 (a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the failure of the licensee to adequately assess and manage the increase in risk associated with maintenance activities. Specifically, on May 31, 2011, licensee personnel failed to adequately assess and manage the increase in risk associated with maintenance activities of a large trailer that parked close to the 161kV line tower in the transformer yard area without Operations Department personnel knowledge.

Description. During a plant walkdown on May 31, 2011, inspectors identified a tractor trailer parked within 10 feet of a 161kV line tower. This area is posted to contact operations when working in the area. The inspectors questioned the placement of the tractor trailer, and during discussions with the on-duty shift manager and duty work control senior reactor operator determined that they were not aware of the positioning of this trailer and an on-line risk assessment was not performed to determine any increase the likelihood of initiating events associated with the activity.

The inspectors were also aware that past switchyard work had been performed with inadequate risk assessments and a notice of violation was open on inadequate risk assessments (VIO 05000298/2011002-02, "Failure to Assess and Manage Risk for Maintenance That Could Impact Initiating Events.") The licensee initiated CR-CNS-2011-01439, moved the trailer away from the tower, and erected a fence to prevent large equipment from entering the transformer area without Operations' knowledge.

The inspectors are monitoring the licensee progress in improving their station 50.65 (a)(4) risk assessment process following the notice of violation, VIO 05000298/2011002-02, "Failure to Assess and Manage Risk for Maintenance That Could Impact Initiating Events," and have noted significant progress. This example occurred prior to implementation of corrective actions that possibly could have prevented these occurrences. The inspectors will continue to monitor for improving plant performance in this area prior to closing the notice of violation.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to assess and manage the risk of planned maintenance activities. This finding is more than minor because it affected the protection against external factors attribute of the Initiating Events Cornerstone, and directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used due to the licensee's inability to quantify the increase in risk associated with the heavy equipment near an offsite power tower. The inspectors utilized Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," to determine that the

finding was of very low safety significance because other qualified sources of offsite power (the emergency and main transformers) provided sufficient remaining defense in depth in the event of a loss of offsite power to the station transformer. This finding had a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee failed to adequately define and effectively communicate expectations regarding procedural compliance and personnel failed to follow procedures [H.4(b)].

Enforcement. Title 10 CFR 50.65 (a)(4), states in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, on May 31, 2011 licensee personnel failed to assess and manage the increase in risk associated with maintenance activities. Specifically, qualitative assessments of maintenance activities in or near offsite power components were not included in the on-line risk assessment. Because the violation was of very low safety significance and it was entered into the licensee's corrective action program by Condition Reports CR-CNS-2011-09308, CR-CNS-2011-06363 and CR-CNS-2011-09452, the violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011004-03, "Failure to Assess and Manage Risk for Maintenance Near Electrical Towers That Could Impact Initiating Events."

- .2 Introduction. The inspectors identified a Green noncited violation of 10 CFR 50.65 (a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the failure of the licensee to adequately assess and manage the increase in risk associated with maintenance activities. Specifically, on June 3, 2011, the licensee performed leak injection work of a steam supply piping flange to the reactor feed pump without assessing the risk associated with that activity.

Description. The inspectors were performing baseline Inspection Procedure IP 71111.13, "Maintenance Risk Assessments and Emergent Work Control," and selected a job to perform on-line leak repair of a main steam piping flange above an operating reactor feed pump for review based on its risk significance and the emergent nature of the work. The inspectors attended the August 3, 2011, pre-job briefing for the job. During the briefing there was discussion that this work was a potential transient initiator if the reactor feed pump below the work site was impacted. The inspectors, noted that a risk assessment was not included in the package, Work Order 48323, and hearing of a potential initiating event discussed, asked if a 50.65 (a)(4) risk assessment had been performed.

The licensee postponed the work, checked for an (a)(4) risk assessment and subsequently determined that one had not been performed. When the licensee performed an appropriate risk assessment using Administrative Procedure 0.49, "Schedule Risk Assessment," Revision 28, they determined this activity screened as high risk activity and this classification required the licensee to develop and implemented appropriate mitigation activities for this work activity.

The inspectors noted that the licensee's actions in response to their questions for this performance of the activity did ensure compliance. However, during their review the inspectors noted that this activity was being done as re-performance of a previous leak

repair. The initial repair had performed on June 3, 2011 using the same work package, Work Order 48323. The inspectors also reviewed the previous instances instructions and risk assessment.

The inspectors determined that the initial work order instructions and assessment used for the August 3, 2011 work were the same as those used for the June 3, 2011 work. As such, the inspectors determined that the licensee had failed to adequately assess and manage the risk associated with this activity. The licensee initiated CR-CNS-2011-9308 on this issue.

The inspectors are monitoring the licensee progress in improving their station 50.65 (a)(4) risk assessment process following the notice of violation, VIO 05000298/2011002-02, "Failure to Assess and Manage Risk for Maintenance That Could Impact Initiating Events," and have noted significant progress. This example occurred prior to implementation of corrective actions that possibly could have prevented this occurrence. The inspectors will continue to monitor for improving plant performance in this area prior to closing the notice of violation.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to assess and manage the risk of planned maintenance activities. This finding is more than minor because it affected the protection against external factors attribute of the Initiating Events Cornerstone, and directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used due to the licensee's inability to quantify the increase in risk associated with reactor feed pump trip due to work in the area. The inspectors utilized Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," to determine that the finding was of very low safety significance because a second reactor feed pump running that would have limited a plant transient. The inspectors determined that the apparent cause of the finding was that the licensee had not fully implemented corrective actions for VIO 05000298/2011002-02. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)].

Enforcement. Title 10 CFR 50.65 (a)(4), states in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, on June 3, 2011 licensee personnel failed to assess and manage the increase in risk associated with maintenance activities. Specifically, qualitative assessments of maintenance activities near the reactor feed pump were not included in the on-line risk assessment. Because the violation was of very low safety significance and it was entered into the licensee's corrective action program by Condition Reports CR-CNS-2011-09308, CR-CNS-2011-06363 and CR-CNS-2011-09452, the violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011004-04, "Failure to Assess and Manage

Risk for Maintenance Near an Operating Reactor Feed Pump That Could Impact Initiating Events."

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- August 24, 2011, Reactor equipment cooling pump D
- August 25, 2011, Check valve SW-CV-30CV leak
- August 25, 2011, Gothic steam exclusion boundary door analysis concerns for Door H307
- August 26, 2011, 10 CFR Part 21 on General Electric control rod blade seismic input

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

These activities constitute completion of four operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

Temporary Modifications

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the temporary modification identified as the temporary configuration change implemented for the A Zurn strainer pinch valve.

The inspectors reviewed the temporary modification and the associated safety-evaluation screening against the system design bases documentation, including the Updated Final Safety Analysis Report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

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

- July 12, 2011, Residual heat removal valves MO66A and MO13A maintenance
- August 1, 2011, Reactor equipment pump D maintenance to correct high vibrations
- August 26, 2011, Control room emergency filtration system postmaintenance test on HV-AOV-271AV after replacing missing spanner ring
- September 8, 2011, Reactor building radiation monitor failure
- September 23, 2011, Postmaintenance testing of service water booster pump D

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

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

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls

- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

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

- July 21, 2011, Residual heat removal check valve 11 inservice testing internal inspection
- September 6, 2011, Residual heat removal and reactor equipment cooling inservice test rebaselining
- September 8, 2011, Reactor building exhaust vent radiation monitor RMP-RR-452a calibration
- September 13, 2011, Residual heat removal heat exchanger A closed loop flow testing
- September 19, 2011, Reactor coolant system 8:00 a.m. leak check and trend review

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

These activities constitute completion of five surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on August 23, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Emergency Operations Facility 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 corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

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

b. Findings

No findings were identified.

.2 Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on September 20, 2011, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the postevolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

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

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the second quarter 2011 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

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

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications (IE02)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams with complications performance for the period from the third quarter 2010 through the second quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC integrated inspection reports for the period of July 2010 through June 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned scrams with complications sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

40A2 Identification and Resolution of Problems (71152)

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

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

Introduction. The inspectors reviewed a Green, self revealing, noncited violation of Technical Specification 5.4.1, resulting from a plant individual who failed to follow radiation work permit requirements and was contaminated as a result. The condition

was detected when the contamination monitor alarmed during the individual's attempt to process out of the radiologically controlled area. The individual was then decontaminated prior to exiting.

Description. On August 8, 2011, an individual was contaminated while performing venting of the residual heat removal piping in the reactor building. The individual vented and drained a contaminated system without notifying radiation protection as required by his radiation work permit. The individual not stopping and briefing radiation protection at the radiation controlled area access prior to entry into the radiation controlled area contributed to them not being present as required. Radiation Work Permit 2011-002 required, "RP TO BE PRESENT DURING CONTAMINATED SYSTEM BREACH."

The individual alarmed the whole body contamination monitor when attempting to exit the radiation controlled area. Although the worker did not exceed the dose limit of the job, contamination was found on his hand and upper leg of his pants that measured 300 ncpm/probe area. A follow-up survey of the area where the individual performed venting found 1000 to 4500 dpm/100cm² in the area. The area has been posted as a clean controlled area prior to the venting. Condition Report CR-CNS-2011-8582 was initiated on the personnel contamination.

The licensee human performance review determined that the individual was unfamiliar with the radiation work permit requirements. The licensee has communicated the lessons learned from this issue to their organization using the Radiation Worker Behavior Clock.

Analysis. The failure to follow radiation work permit requirements is a performance deficiency. The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, working outside the scope of the radiation work permit resulted in personnel contamination and contamination levels in the area had the potential to increase personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding has a human performance cross-cutting aspect associated with the work practices component, when the licensee failed to assure that human error prevention techniques, such as self checking are used to assure that work activities are performed safely when an individual failed to self check requirements prior to entering the radiation controlled area and was contaminated [H.4(a)].

Enforcement. Technical Specification 5.4.1.a requires implementation of applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 7(e) of Appendix A requires, in part, procedures for access control to radiation areas including a radiation work permit system should be prepared. Procedure 9.ALARA.4, "Radiation Work Permit," Revision 14, implements this requirement and states, in part, that each individual is responsible to comply with the radiation work permit requirements. Radiation Work Permit 2011-002, "Operations Activities," require radiation protection personnel to be present prior to breaching contaminated systems. Contrary to the above, on August 8, 2011, an individual did not

comply with radiation work permit #2011-002 requirements when a contaminated system was breached without radiation protection present. The licensee entered the issue into the corrective action program as Condition Report CR-CNS-2011-08582. Because the violation was of very low safety significance and it was entered into the licensee's corrective action program, the violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011004-05, "Failure to Follow Procedure Results in Personnel Contamination."

.3 Selected Issue Follow-up Inspection

Compliance with 10 CFR 50.59

a. Inspection Scope

The inspectors selected this issue for review because of the frequency of which issues were being identified, and because the failure to properly evaluate changes made to the facility could have a significant impact on station equipment and result in the system not being able to perform its design functions. The inspectors considered the following, as applicable, during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

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

b. Findings

No findings were identified.

40A3 Event Follow-up (71153)

.1 (Closed) LER 050002982010005-01, "Steam Exclusion Barrier Blocked Open Results in Loss of Safety Function"

a. Inspection Scope

On November 9, 2010, a steam exclusion barrier door in the control room corridor at Cooper Nuclear Station was blocked open with a ladder to facilitate preventive maintenance. With this steam exclusion barrier door obstructed, steam from a postulated high energy line break could propagate into the control room and affect operability of systems, structures, or components necessary to safely shut down, cool down, and maintain cold shutdown conditions of the plant. During the time frame the door was blocked open for the work evolution, there were no Technical Specification required actions taken and no compensatory measures implemented. The root cause of this event was a failure to implement a comprehensive barrier control process. To

prevent recurrence, Cooper Nuclear Station will develop a hazard barrier control process using appropriate fleet engineering standards or other approved industry guidance.

b. Findings

Introduction: The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to implement adequate corrective actions to preclude recurrence of a significant condition adverse to quality.

Description: On August 19, 2010, while performing maintenance activities on emergency diesel generator 2, licensee personnel blocked open door N103 (security and steam exclusion boundary door for both diesel generators). The licensee determined that while the door was in this condition they had disabled the hazard barrier protecting the emergency diesel generators (i.e. the high energy line break barrier) and this made both emergency diesel generators inoperable. The licensee performed a root cause evaluation of this issue, documented in Condition Report CR-CNS-2010-5972 which was completed on October 21, 2010. They determined that the root cause for this issue was the impairment of the N103 steam exclusion boundary door for maintenance activities was evaluated using procedural guidance based upon a probabilistic risk assessment rather than performing an operability evaluation. The corrective actions implemented to prevent recurrence were to provide training materials to the operators that explained and clarified when probabilistic risk assessments can be used, and when they cannot be used.

On November 9th, 2010, while touring the facility, the inspectors noted maintenance personnel performing work activities (examine doors & seals, lubricate seals) on reactor building door H300 with the door blocked open in such a way as to prevent closure. Specifically, the workers were using a ladder to facilitate the inspections, and it was placed in the travel path of the door. This ladder would have prevented the closing of the door, and the inspectors questioned if this was acceptable. Inspectors were informed by maintenance personnel and control room operators that door H300 was a fire door, and a control room emergency filter (ventilation) boundary and with the maintenance personnel there at the door it was acceptable for the door to be in this configuration.

Subsequently, inspectors reviewed Station Procedure 0.16, "Control of Doors," Revision 42, and determined that this door was also credited with protecting the control room from the effects of a high energy line break. The inspectors then reviewed the work order for the activity and determined that the work order did not identify this door as a high energy line break door. Based on this, the inspectors determined that the ladder in the travel path of the door would have prevented the door from closing during a high energy line break event, and the operators had failed to recognize the significance of the door. Due to this lack of recognition, the licensee failed to either perform an assessment of the risk incurred to the station during this activity, declare the protected equipment inoperable, or provide an equivalent level of protection for the equipment being protected by the barriers.

The inspectors informed the licensee of their concerns, and the licensee initiated Condition Report CR-CNS-2010-9639. This condition report was closed to CR-CNS-2010-9553, which had been written because an adequate extent of condition review had not been performed following the issue with door N103. Subsequently, the licensee determined that the condition of door H300 was reportable and initiated Condition Report CR-CNS-2011-0684 to perform a root cause analysis of this issue.

The inspectors also learned that the activity observed on door H300 was a monthly maintenance activity performed on all high energy line break doors, and the licensee had continued to perform the monthly maintenance following their identification of this issue with door H300. To do this, the licensee had performed a risk assessment of this activity and determined that it was allowable with a risk management action, maintenance personnel were not to allow the ladder to be placed in the travel path of the doors. This would allow the automatic closure mechanism of the door to shut it in the event of a high energy line break, and would protect the equipment served by the doors.

The inspectors continued to question the licensee's risk assessment and risk mitigation actions. In March 2011, based on the continued questions by the inspectors, the licensee recognized that some of the high energy line break doors were double doors, and the automatic closure mechanism was installed on only one side of the door. However, the maintenance activity was being performed on both sides of the door. As such, the side without the auto closure mechanism could not be credited to protect equipment when it was opened.

Based on this, the inspectors determined that the assessment that had been performed for the monthly maintenance activity on the doors was inadequate, and the licensee had failed to either perform an adequate assessment of the risk incurred to the station during this activity, declare the protected equipment inoperable, or provide an equivalent level of protection for the equipment being protected by the barriers.

As such, the inspectors determined that the station's corrective actions to prevent recurrence from the root cause documented in CR-CNS-2010-5972 were inadequate because the licensee had continued to breach hazard barriers without proper recognition.

The inspectors informed the licensee of their concerns with the previous actions taken to prevent recurrence, and the licensee initiated Condition Report CR-CNS-2011-9217 to capture this issue.

Analysis: The failure to implement adequate corrective actions to preclude recurrence of a significant condition adverse to quality was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the finding: (1) was not a design or qualification issue confirmed not to result in a loss of operability or

functionality; (2) did not represent an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The apparent cause of this finding was that the licensee had not thoroughly evaluated maintenance activities on the doors. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action component, in that, the licensee failed to; 1) thoroughly evaluate problems such that the resolutions addressed causes, and 2) for significant conditions, conduct effectiveness reviews of corrective actions to ensure that the problems were resolved [P.1(c)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformance's are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition." Contrary to the above, between August 2010, and March 2011, the licensee failed to assure that the cause of the condition was determined and corrective action taken to preclude repetition. Specifically, station personnel breached hazard barriers without either assessing the risk incurred to the station, declaring the protected equipment inoperable, or providing an equivalent level of protection for the equipment being protected by the barriers. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Reports CR-CNS-2011-0684 and CR-CNS-2011-9217, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011003-06, "Failure to Identify, Correct, and Prevent Recurrence of a Significant Condition Adverse to Quality."

.2 (Closed) LER 050002982011002-01, "Steam Technical Specification Prohibited Condition for Service Water Booster Pump"

a. Inspection Scope

On April 17, 2011, the outboard oiler reservoir for Service Water Booster Pump B motor was observed to be low, and there was an oil sheen on the floor and motor. As a result, oil was added to the reservoir. On April 27, 2011, the outboard oiler reservoir was discovered empty, there was oil in the windings area of the motor, and oil coated the motor mount area. Service Water Booster Pump B was subsequently declared inoperable at 3:40 p.m. on April 28, 2011. Inspection of the motor's outboard bearing and oil reservoir was conducted to identify the source of the oil leakage. The upper bell housing at the outboard end of the motor was removed. Further investigation found that the four cap bolts that hold the upper bearing in place were only "finger tight" and the corresponding lock washers were not compressed. The licensee determined the root cause to be a lack of inspection protocol for large electric motors including a check for loose bolts.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion VII, Control of Purchased Material, Equipment, and Services, associated with the licensee's failure to have adequate receipt inspection procedures to establish measures to assure that purchased material, equipment, and services conform to the procurement documents. Specifically, using the station procedure for the receipt inspection of the essential motor for the residual heat removal service water booster pump, the licensee failed to identify loose bearing cap bolting. The motor was subsequently installed in the plant for ten months before the degraded condition was identified.

Description. The inspectors performing baseline Inspection Procedure IP 71111.15, "Operability Determinations and Functionality Assessments," selected two service water booster pump B oil leakage condition reports to review based on their risk significance and repeated oil leakage problems. Condition Reports CR-CNS-2011-04643 and CR-CNS-2011-05230 documented an oil leak on the service water booster pump motor outboard bearing on April 17, 2011 and April 27, 2011 respectively. The inspectors review of the initial April 28, 2011 operability determinations determined they were inadequate to establish operability as they only evaluated the as-found oil level as sufficient to support operability. The inspectors questioned the control room staff with this issue as the evaluation did not determine if this oil leak would allow the motor to run for its required mission time. The operations staff initiated CR-CNS-2011-4689 to document the inspectors' questions and Version 2 of the operability determination, written the afternoon of April 28th determined that the affected service water booster pump was inoperable until it could be repaired. The following day maintenance on the motor to repair the oil leak discovered all four of the motor bearing cap bolts were loose and a gap existed between the bearing halves.

The investigation determined, "The cap bolts on the upper bearing half of the outboard bearing in the Service Water Booster Pump "B" motor had not been properly tightened when it was received at Cooper Nuclear Station. Cooper Nuclear Station did not have a receipt inspection protocol for large electric motors to check for loose bolts." The motor had been received onsite and inspected in June 2007. The motor was installed on the service water booster pump B in July 2010. The motor had very low run hours during the initial months and it is assumed that the gasket sealant prevented any oil leakage until extended runs resulted in the initially observed leakage on April 17, 2011. The pump was inoperable due to seismic and oil leakage concerns from time of installation in July 2010 until the motor bearings cap screws were tightened by maintenance on April 29, 2011. Corrective actions include improved receipt inspection procedures for large motors and a vendor inspection of the Appendix B programs of the motor supplier.

Analysis. The failure to have adequate receipt inspection procedures to establish measures to assure that purchased material, equipment, and services conform to procurement documents is a performance deficiency. The performance deficiency was more than minor because it adversely impacts the equipment performance attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of

Findings,” the finding screened as potentially risk significant since the finding represents an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time. When evaluated per Manual Chapter 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations,” and the Cooper Phase 2 pre-solved table item, “One RHRSWBP,” the inspectors determined this finding to be potentially risk significant. The finding was forwarded to a senior reactor analyst for review. A senior reactor analyst performed an SDP Phase 3 analysis. The standby service water booster pump was determined to have at least a 24-hour run capability for the entire exposure period of 10 months. Because this met the PRA mission time, there was no increase in the CDF for internal events. As a bounding assumption, the pump was assumed to fail immediately in response to any earthquake that exceeded the operating basis earthquake, defined as 0.1g peak ground acceleration. To further bound the issue, the analyst used the seismic frequency for earthquakes that exceed 0.08g peak ground acceleration, which is $7.3E-4/yr$. The SPAR model was used to determine a delta-CCDP for an earthquake assuming a loss of offsite power both with and without consideration of the degraded standby service water pump. This was $1.43E-4$. The delta-CDF was therefore $(7.34E-4/yr)(1.43E-4) = 1.05E-7/yr$ or $8.75E-8/yr$ for a 10-month exposure. Based on this, it was determined that the finding was of very low safety significance. This finding did not have a crosscutting aspect since the receipt inspection took place greater than three years ago and, therefore, the finding is not reflective of current performance.

Enforcement. 10 CFR 50 Appendix B, Criterion VII, Instructions, Control of Purchased Material, Equipment, and Services, states in part that measures shall be established to assure that purchased material, equipment, and services conform to the procurement documents. Contrary to the above, the licensee failed to assure that purchased equipment conformed to the procurement documents, in that the licensee failed to establish adequate receipt inspection procedures to assure that the essential motor for residual heat removal service water booster pump conformed to procurement documents. Specifically, during the motor receipt inspection performed June 11, 2007, the licensee failed to assure that critical bolting was tightened properly. This resulted in lube oil leakage and loss of seismic qualification of the motor when installed in the plant July 15, 2010 until corrected on April 29, 2011. Because the finding is of very low safety significance and has been entered into the licensee’s corrective action program as CR-CNS-2011-04643, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000298/2011004-07, “Inadequate Procedure Results in Inoperable Essential Pump.”

.3 (Closed) Licensee Event Report 0500298/2010-002, “Appendix R Containment Overpressure Credit”

On July 13, 2010, the licensee identified that the fire protection program did not ensure that containment overpressure was maintained during all fire scenarios. Specifically, the licensee identified that fire-induced spurious operations due to a control room fire may result in the loss of containment overpressure and resultant loss of net positive suction head to the residual heat removal pumps. This condition constituted an unanalyzed condition since the licensee’s calculations assumed that containment overpressure would be present during a control room fire scenario.

The licensee implemented compensatory measures that consisted of establishing hourly fire watch patrols for the susceptible fire areas. These fire watch patrols continued until procedure changes that addressed the condition were completed on July 24, 2010. The licensee stated that permanent corrective actions will be addressed under the NFPA 805 Transition Project. To prevent recurrence of this event, the licensee established a process that provides a second check of decisions made with respect to the corrective actions that pertain to the Appendix R Analysis, the Safe Shutdown Analysis Report, or related procedures.

The inspectors concluded that this condition constituted a violation of 10 CFR 50, Appendix R, Section III.G.1, since the licensee failed to provide fire protection features for systems, structures, and components important to safe shutdown such that one train of systems necessary to achieve and maintain hot and cold shutdown conditions will remain free of fire damage.

The issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of external events (fire) and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

Since the licensee committed to adopt a risk-informed fire protection program, the Senior Risk Analyst completed a bounding risk assessment for this issue. The increase in risk from the finding was restricted to scenarios where operators abandon the control room in the event of a fire in one of five alternate shutdown areas. The frequency of control room abandonment was estimated to be $4.9E-5/yr$. Therefore, the increase in risk from this issue cannot be greater than $4.9E-5/yr.$, and this issue has less than a high safety significance (i.e., less than Red).

The licensee entered this issue into their corrective action program as Condition Request CR-CN-2010-05023. Since the licensee was in transition to NFPA 805 when this issue was identified, this licensee-identified violation was evaluated in accordance with the criteria established by the NRC's Interim Enforcement Policy. The inspectors determined that: (1) the licensee identified the violation during the scheduled transition to 10 CFR Part 50, Section 48(c); (2) the licensee had established adequate compensatory measures within a reasonable time frame following identification and will correct the violation as a result of completing the NFPA 805 transition; (3) the violation was not likely to have been previously identified by routine licensee efforts; and (4) the violation was not willful. In addition, the violation was not associated with a finding of high safety significance (i.e., Red). Therefore, in accordance with the NRC's Enforcement Policy, Section 9.1, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)," the NRC is exercising enforcement discretion to not cite this violation. (EA 11-236)

40A6 Meetings

Exit Meeting Summary

On September 14, 2011, the inspectors presented the results of the licensee event report closeout inspection to Mr. J. Flaherty, Licensing Engineer. The licensee acknowledged the

issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 29, 2011, the inspectors presented the inspection results to Mr. B. O'Grady, Vice President–Nuclear and Chief Nuclear Officer and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

J. Austin, Manager, System Engineering Department
T. Barker, QA Manager
M. Bakker, System Engineer
N. Beger, Work Control Supervisor
J. Corey, Manager, Radiation Protection
J. Dedic, Shift Manager
J. Dykstra, System Engineer \
J. Flaherty, Licensing Engineer
D. Goodman, Assistant Operations Manager
J. Horn, Eng Supervisor
J. Larson, QA Supplier Leader
J. Long, Shift Manager
M. Ray, Maintenance Rule Coordinator, System Engineering Department
S. Nelson, Engineer, Risk Management Supervisor
R. Noon, Root Cause Team Leader
S. Norris, Work Control Manager
M. Ray, Maintenance Rule Coordinator, System Engineering Department
R. Penfield, Operations Manager
K. Sutton, Manager, Nuclear Engineering Department
D. Willis, Plant Manager
B. Wolkin, Eng Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000298-2011004-01	NCV	Failure to Place the Essential Service Water System Strainers in (a)(1) (Section 1R12)
05000298-2011004-02	NCV	Failure to Scope Reactor Building Drain Components and Steam Exclusion Doors that Affect Safety-related Systems in the Maintenance Rule Monitoring Program (Section 1R12)
05000298-2011004-03	NCV	Failure to Assess and Manage Risk for Maintenance Near Electrical Towers That Could Impact Initiating Events (Section 1R13)
05000298-2011004-04	NCV	Failure to Assess and Manage Risk for Maintenance Near an Operating Reactor Feed Pump That Could Impact Initiating Events (Section 1R13)
05000298-2011004-05	NCV	Failure to Follow Procedure Results in Personnel Contamination (Section 4OA2)
05000298-2011004-06	NCV	Failure to Identify, Correct, and Prevent Recurrence of a Significant Condition Adverse to Quality (Section 4OA3)
05000298-2011004-07	NCV	Inadequate Procedure Results in Inoperable Essential Pump (Section 4OA3)

Closed

05000298/2010-002-00	LER	Appendix R Containment Overpressure Credit
05000298-2010-005-01	LER	Steam Exclusion Barrier Blocked Open Results in Loss of Safety Function (Section 4OA3)
05000298-2011-002-01	LER	Steam Technical Specification Prohibited Condition for Service Water Booster Pump (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1RO4: Equipment Alignment

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>
4844944	Temporary Change Configuration

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2.2.20	Operating Procedure, "Standby AC Power System (Diesel Generator)"	78

CONDITION REPORTS

CR-CNS-2011-08812 CR-CNS-2011-09651 CR-CNS-2011-09886

Section 1RO5: Fire Protection

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	CNS Fire Hazards Analysis	July 28, 2011
6	Drawing Misc Buildings Elevation 903'-6"	July 28, 2011
25	Fire Brigade Scenario	0
CNS-FP-352	CNS Fire Pre-Plan for Yard Fire Protection	2

CONDITION REPORTS

CR-CNS-2011-05297 CR-CNS-2011-05498 CR-CNS-2011-06457 CR-CNS-2011-09351

NOTIFICATION

10808907

Section 1R11: Licensed Operator Requalification Program

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
25	Fire Brigade Scenario	0

Section 1R12: Maintenance Effectiveness

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
EE03-003	Engineering Evaluation	

Section 1R12: Maintenance Effectiveness

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
SW-F01	Maintenance Rule Function Performance Criteria Basis Engineering Evaluation EE03-003	September 22, 2011

CONDITION REPORTS

CR-CNS-2011-01859	CR-CNS-2011-02021	CR-CNS-2011-02213	CR-CNS-2011-02232
CR-CNS-2011-05251	CR-CNS-2011-08812	CR-CNS-2011-08871	CR-CNS-2011-09030
CR-CNS-2011-02021	CR-CNS-2011-09030	CR-CNS-2011-08812	CR-CNS-2011-08871
CR-CNS-2010-02213	CR-CNS-2011-01859		

NOTIFICATION

10226152	10613783	10660425	10661069	10723748
10613783	10660425	10661069	10723748	10226152

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Narrative Log entries - 3:31 a.m. and 4:09 p.m.	August 16, 2011

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0.49	Administrative Procedure, "Schedule Risk Assessment"	29
0-CNS-52	Administrative Procedure, "Control of Switchyard and Transformer Yard Activities at CNS,"	22

CONDITION REPORTS

CR-CNS-2011-08812	CR-CNS-2010-09146	CR-CNS-2009-01465	CR-CNS-2009-03714
CR-CNS-2008-08645	CR-CNS-2011-00749	CR-CNS-2011-01369	CR-CNS-2011-01439

WORK ORDERS

4688721	4832393	4716328	4784034	4740703
4815917	4784034	4809054	4740890	4786633

Section 1R15: Operability Evaluations

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0.5 OPS	Administrative Procedure, "Operations Review of Condition Reports/Operability Determination"	33

CONDITION REPORTS

CR-CNS-2011-03972	CR-CNS-2011-07841	CR-CNS-2011-08031	CR-CNS-2011-08086
CR-CNS-2011-08090	CR-CNS-2011-08750		

Section 1R18: Plant Modifications

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>
4844944	Temporary Change Configuration

Section 1R19: Postmaintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2.2.70	RHR Service Water Booster Pump System	67
6.1PRM.304	Surveillance Procedure, "Reactor Building Ventilation Radiation Monitor Channel Calibration and Functional Test/Source Check (Div 1)"	17
6.1RHR.201	Surveillance Procedure, "RHR Power Operated Valve Operability Test (IST)(Div 1)"	23
6.2REC.101	Surveillance Procedure, "REC Surveillance Operation (IST)(DIV 2)"	10

CONDITION REPORTS

CR-CNS-2011-07841	CR-CNS-2011-09037	CR-CNS-2011-09460	CR-CNS-2011-09846
-------------------	-------------------	-------------------	-------------------

WORK ORDERS

4749896 4749897 4839517 4845860 4850760

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
6.LOG.601	Surveillance Procedure, "Operator Logs, Attachment 3 Unidentified Leakage Rate Checks"	109
6.RHR.401	Surveillance Procedure, "RHR Minimum flow Check Valve IST Disassembly and Examination"	6
6.1PRM.304	Surveillance Procedure, "Reactor Building Ventilation Radiation Monitor Channel Calibration and Functional Test/Source Check (Div 1)"	17

CONDITION REPORTS

CR-CNS-2011-07992 CR-CNS-2011-08031 CR-CNS-2011-08090 CR-CNS-2011-09313
CR-CNS-2011-09460

WORK ORDERS

4568084 4753330 4813407

Section 1EP6: Drill Evaluation

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
25	Fire Brigade Scenario	0

CONDITION REPORTS

CR-CNS-2011-09039

Section 4OA2: Identification and Resolution of Problems

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
9.RADOP.1	Radiation Protection at CNS	9

Section 40A2: Identification and Resolution of Problems

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
9.EN-RP-101	Access Control for Radiologically Controlled Areas	9
9.EN-RP-108	Radiation Protection Posting	5

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
2011-002	Operations Activities

CONDITION REPORTS

CR-CNS-2011-04643 CR-CNS-2011-08582

Section 40A3. Event Follow-up (71153)

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
GE SC06-11	Confirmation of Adequate NPSH for Special Event	09/20/2006
5.4Fire-S/D	Fire Induced Shutdown From Outside Control Room	44
5.4POST-FIRE	Post-Fire Operational Information	40

OPERATING EXPERIENCE

GL 97-04	Assurance of Sufficient Net Positive Suction Head for Emergency Core cooling and Containment Heat Removal Pumps	10/07/1997
----------	---	------------

CONDITION REQUESTS

CR-CN-2010-05023