



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4125

August 5, 2011

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 05000298/2011003

Dear Mr. O'Grady:

On June 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 July 7, 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 determined that one Severity Level IV violation of NRC requirements occurred, and nine additional issues were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has determined that violations are associated with these issues. Additionally, two licensee identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of their very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at 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 enclosure, and your response, 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,

/RA/

Vince Gaddy, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DRP-46

Enclosure:
NRC Inspection Report 05000298/2011003
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000298

License: DRP-46

Report: 05000298/2011003

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: 72676 648A Ave
Brownville, NE 68321

Dates: March 25 through June 23, 2011

Inspectors: J. Josey, Senior Resident Inspector
M. Chamber, Resident Inspector
N. Greene, PhD., Health Physicist
G. Pick, Senior Reactor Inspector
L. Ricketson, P.E., Senior Health Physicist
M. Young, Reactor Inspector

Approved By: Vince Gaddy, Chief, Project Branch C
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000298/2011003; 03/25/2011–06/23/2011; Cooper Nuclear Station, Integrated Resident and Regional Report; Flood Protection Measures, Operability Evaluations, Refueling and Other Outage Activities, Radiological Hazard Assessment and Exposure Controls, Problem Identification and Resolution, Event Follow-Up, Other Activities.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspections by region-based inspectors. Nine Green noncited violations and one Severity Level IV violation 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: Mitigating Systems

- Green. The inspectors identified two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the failure of the licensee to ensure compliance with the requirements of station Procedure 3.3SAFE, "Safety Assessment." Specifically, licensee personnel failed to identify the potential adverse impact to the station internal flooding analysis for the installation of a temporary chemical decontamination skid associated with the fuel pool cooling system, and meshing material installed around the handrails. The licensee performed an evaluation for the skid which demonstrated compliance, and removed the meshing material when it was identified. These issues were entered into the licensee's corrective action program as Condition Reports CR-CNS-2011-2182, CR-CNS-2011-2232, CR-CNS-2011-2240, CR-CNS-2011-2242, CR-CNS-2011-2249, CR-CNS-2011-3551, CR-CNS-2011-5754, and CR-CNS-2011-5798.

The failure to comply with the requirements of station Procedure 3.3SAFE and identify and evaluate the potential adverse impact to the station's internal flooding analysis of several configuration changes 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. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the decision making component, in that the licensee failed to use conservative assumptions in decision making. Specifically, the licensee's qualitative analysis comparing the two hatches failed to take into account configuration differences associated with external structures around the hatch [H.1(b)] (Section 1R06).

- Green. The inspectors identified multiple examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow the requirements of EN-OP-104, "Operability Determinations." Specifically, the inspectors identified examples in which operations failed to properly document the basis for operability when a degraded or nonconforming condition had been identified. The licensee entered these issues into their corrective action program with individual condition reports for each issue. Corrective actions resulted in revised operability reviews and corrective actions to processes and training to prevent similar operability determination problems.

The performance deficiency is more than minor because the condition of performing inadequate operability determinations could become more significant if left uncorrected. Unrecognized degradation of essential equipment 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 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 was determined to have a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component, in that, the licensee failed to thoroughly evaluate problems such that the resolutions addressed causes and extent of conditions. Specifically, licensee personnel failed to thoroughly evaluate conditions adverse to quality and perform meaningful operability determinations [P.1(c)](Section 1R15).

- Green. The inspectors documented a self revealing, noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to assure that the applicable design basis for structures, systems, and components were correctly translated into specifications,

procedures, and instructions. Specifically, the licensee failed to correctly translate the design requirements for the service water zurn strainer's reduction gear to motor shaft into the installed plant equipment. This resulted in instances where the strainer motor was not able to perform its function of strainer backwash, an essential function, due to a failure of the wiper arm motor-to-gear box coupling. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2010-2213.

The licensee's failure to ensure that design requirements were correctly translated into installed plant equipment 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 inspectors determined that a Phase 2/3 assessment was required because this was a design or qualification deficiency that did result in a loss of operability or functionality. The inspectors received support from the regional senior reactor analyst to evaluate this issue. As a bounding analysis, the analyst assumed: (1) the only time this design deficiency would cause an issue would be when strainer backwash was required due to debris loading; (2) the licensee had procedures already in place for manual actions in the event of a coupling failure; (3) the licensee would implement these actions before the strainer became inoperable due to debris loading; and (4) these actions were not complex and could easily be implemented. Given these assumptions the analyst determined that the finding was of very low safety significance (Green). This finding did not have a cross-cutting aspect because the most significant contributor did not reflect current licensee performance (Section 4OA2).

- 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," associated with the licensee's failure to perform an adequate risk assessment for a planned maintenance activity. Specifically, on August 19, 2010, during maintenance activities on emergency diesel generator 2, maintenance personnel inappropriately blocked open the steam exclusion boundary door N-103 that protected both emergency diesel generators, without properly assessing the potential effects on the emergency diesel generators and without appropriate compensatory measures in place. As such, this resulted in both emergency diesel generators being inoperable. These issues were entered into the licensee's corrective action program as Condition Report CR-CNS-2011-7660.

The licensee's failure to adequately assess and manage the risk of planned maintenance activities 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, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding was determined to have very low safety significance. Specifically, Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The senior reactor analyst performed a bounding analysis and determined that the probability that a high energy line breaks, causing the failure of both emergency diesel generators and initiating a consequential loss of offsite power, can be calculated as 3.0×10^{-7} . Given that the change in core damage frequency would be lower than this probability, the analyst determined that the finding was of very low safety significance (Green). The inspectors determined that this finding did not represent current performance because the guidance that formed the basis for the licensee's decision making was developed and approved over two years ago (Section 4OA3).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow written work instructions. Specifically, the inspectors identified that maintenance personnel, when unable to follow written instructions on torquing emergency diesel generator bolting due to mechanical interference, then used alternate methods. These methods contributed to the subsequent loosening of the bolting and degrading the capability of the emergency diesel generator. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2011-07653.

The performance deficiency is more than minor since this failure to follow procedures resulted in a degraded emergency diesel generator which 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). The finding was evaluated using Manual Chapter 0609.04, "Phase 1—Initial Screening and Characterization of Findings," and was determined to be of very low safety significance (Green) because there was not a design or qualification deficiency that resulted in a loss of operability or functionality, it did not create a loss of system safety function or of a single train for greater than the technical specification allowed outage time, it did not represent an actual loss of risk significant equipment, and it did not affect seismic, flooding, or severe weather initiating events. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the work practices component, in that, personnel do not proceed in the face of uncertainty or unexpected circumstances. Specifically, when unable to torque emergency diesel generator bolting by following their written procedures, licensee personnel proceeded in the face of uncertainty by using alternate torque methods [H.4(a)](Section 4OA5.1).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of licensee personnel to follow the requirements of Procedure 0.5, "Conduct of the Condition Report Process." Specifically, licensee personnel failed to initiate condition reports for adverse conditions related to the inability to remove air from emergency core cooling system piping. Licensee personnel identified that high pressure coolant injection system had an incorrect slope and that the core spray system had concentric reducers that could trap gas; however, personnel failed to initiate a condition report that documented the deficiency.

The performance deficiency associated with this finding involved failure of personnel to follow the requirements of Procedure 0.5. Specifically, licensee personnel failed to initiate condition reports for adverse conditions that could result in gas voids in the emergency core cooling systems that could affect operability. The first and third examples are more than minor because the condition of not initiating condition reports for adverse conditions could become more significant if left uncorrected. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because neither example resulted in any loss of safety function of any technical specification required equipment. This finding was determined to have a cross-cutting aspect in the problem identification and resolution area associated with the corrective action program component because licensee personnel failed to implement a corrective action program with a low threshold for identifying issues [P.1(a)](Section 4OA5.2.1).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure of licensee personnel to take actions to promptly correct a condition adverse to quality. Specifically, the licensee did not take any interim actions to eliminate procedure steps that allowed venting of emergency core cooling systems without determining the amount of gas accumulated and the potential impact on system operability.

The performance deficiency associated with this finding involved the failure to correct a condition adverse to quality. This finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of the emergency core cooling systems to respond to initiating events and prevent undesirable consequences. Specifically, licensee personnel failed to promptly correct the previously identified condition adverse to quality of not tracking emergency core cooling system gas accumulation and its potential effects on system operability during surveillance testing. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609.04, "Phase 1—Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because it was not a design or qualification deficiency confirmed not to result in loss of operability or functionality; did not result in loss of a safety function, did not result in loss of

safety function of a single train for longer than its allowed outage time, did not result in loss of a risk-significant nontechnical specification system per 10 CFR 50.65, and did not screen as potentially risk significant because of a seismic, flooding or severe weather initiating event. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the resources component, in that, the licensee failed to provide maintenance of design margins. Specifically, the licensee did not ensure that station procedure were adequate to assure nuclear safety, in that they did require measuring of the amount of entrained gas and any impact on equipment operability [H.2(a)] (Section 4OA5.2.2).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealing, noncited violation of Technical Specification 5.4.1, resulting from workers who entered a posted contamination area without required protective clothing and were contaminated as a result. The condition was detected when contamination monitors alarmed during the workers attempt to process out of the radiologically controlled area. The workers were then decontaminated prior to exiting. The licensee entered the issue into the corrective action program as Condition Report CR-CNS-2011-03311. The corrective actions included communication of the issue throughout the department.

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 in an area outside the scope of the radiation work permit and not following protective clothing requirements resulted in personnel contaminations. 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 was determined to have a cross-cutting aspect in the area of human performance, associated with the work control component, in that, the licensee failed to appropriately coordinate work activities by incorporating actions to address plant conditions that may affect work activities. Specifically, the radiation protection technician failed to verify current conditions prior to briefing workers on expected plant conditions that may affect work activities [H.3(b)](Section 1R20.1).

- Green. The inspectors reviewed a self-revealing, noncited violation of Technical Specification 5.4.1, resulting from workers who failed to follow radiation work permit requirements and entered a high radiation area, after climbing from one scaffold to another. As corrective action, the licensee posted the area, searched for similar situations in the plant, and entered the issue into the corrective action program as Condition Reports CR-CNS-2011-0318 and -03217.

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 in an area outside the scope of the radiation work permit and not knowing the dose rates in the high radiation 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 work practices component because the individuals did not use peer or self-checking before climbing to the second scaffold [H.4(a)](Section 2RS01).

Cornerstone: Miscellaneous

- Severity Level IV. The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.70, "Inspections," associated with the licensee's failure to ensure that the arrival and presence of NRC inspectors was not communicated to persons at the facility. Specifically, a radiation protection technician manning the access point to the drywell informed other individuals entering the drywell to perform work of inspector's presence and location during an unannounced walkdown of the drywell to observe licensee work activities. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2011-4124.

Licensee personnel's action of announcing the presence and location of NRC inspectors during an unannounced walkdown inspection was a performance deficiency. The inspectors reviewed this issue in accordance with NRC Inspection Manual Chapter 0612 and the NRC Enforcement Manual. Through this review, the inspectors determined that traditional enforcement was applicable to this issue because the NRC's regulatory ability was affected. Specifically, the NRC relies on its ability to perform unannounced inspections to evaluate licensee performance, and communicating the presence and location of NRC inspectors affects their ability to perform these inspections, and as such the regulatory function is impacted. The inspectors determined that this finding was not suitable for evaluation using the significance determination process, and as such, was evaluated in accordance with the NRC Enforcement Policy. The finding was reviewed by NRC management and because the violation was determined to be of very low safety significance, was not repetitive or willful, and was entered into the corrective action program, this violation is being treated as a Severity Level IV noncited violation consistent with the NRC Enforcement Policy. The inspectors determined that there was no cross-cutting aspect associated with this finding because this issue was not indicative of current performance because the violation did not affect any of the safety culture components (Section 1R20.3).

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Cooper Nuclear Station began the inspection period shutdown for Refueling Outage 26. The plant returned to full power on May 12, 2011, where it remained for the rest of the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

1. Summer Readiness for Offsite and Alternate-AC Power

a. Inspection Scope

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

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

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

their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- April 28, 2011, Supplemental diesel generator tie in activities

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

b. Findings

No findings were identified.

.2 Readiness for Seasonal Extreme Flooding Conditions

a. Inspection Scope

The inspectors performed a review of the flooding procedures and site actions for seasonal extreme flooding of the Missouri River. Due to rising Missouri River level the site declared a Notification of Unusual Event on June 19, 2011 when the river reached 899 feet Mean Sea Level. The inspectors verified that the site had developed detailed plans and contingency actions for the record flooding of the Missouri River. They attended flooding preparation meetings, reviewed the licensee's plans, and ensured that the site had addressed requirements for plant shutdown if required. The inspectors reviewed the protective strategies for the plant's systems to ensure that they would be affective against the record flooding. The inspectors reviewed previously identified deficiencies to determine if these had been addressed prior to the onset of higher than normal flooding in the area. Inspectors also evaluated the implementation of the site plan for flooding preparation and compensatory measures before the onset of, and during, the flooding conditions.

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

- Emergency diesel generators
- Offsite power availability

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

b. Findings

No findings were identified

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- April 28, 2011, Residual heat removal pump A and pump C suction lines to the torus including RHR-MOV15A, C and V-98
- May 3, 2011, Reactor recirculation train B refill activities
- May 19, 2011, High pressure coolant injection system discharge pipe has reverse slope

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 April 11, 2011, the inspectors performed a complete system alignment inspection of the high pressure coolant injection suction lines from the torus through residual heat removal pump B, southwest quad, 859 feet elevation level, 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)

Quarterly Fire Inspection Tours

a. Inspection Scope

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

- April 9, 2011, Reactor core isolation cooling and core spray A, Zone 1A
- April 9, 2011, Diesel generator 1 room, Zone 14A
- April 11, 2011, Residual heat removal train A, reactor building 859 feet elevation level, Zone 1C
- April 11, 2011, Reactor building 859 feet elevation level, west end below torus, Zone 1F

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.

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; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the area 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.

- June 20, 2011, Reactor building 903 feet elevation

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

Introduction. The inspectors identified two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings,"

associated with the failure of the licensee to ensure compliance with the requirements of station Procedure 3.3SAFE, "Safety Assessment."

Description. Station Procedure 3.3SAFE, "Safety Assessment," Revision 14, provides direction to the licensee for performing safety assessments for proposed activities to document nuclear safety considerations. This procedure is used to evaluate activities affecting the configuration and operation of the facility to determine if they are safe. Attachment 2, "Safety Assessment Checklist," is used by engineering to perform these assessments. Any item indicating a potential adverse impact on nuclear safety, requires that an assessment of the proposed activity be performed and documented.

While touring the plant on March 8, 2011, the inspectors identified a concern with equipment that had been placed in the southwest corner of the building to support the chemical decontamination efforts associated with the fuel pool cooling system, and its potential effects on the internal flooding analysis for 903 feet elevation of the reactor building. Specifically, the inspectors noted that the licensee had placed a skid and supporting equipment in this area, and this skid, supporting equipment and the hoses connected to it caused a blockage of the south hallway such that the minimum width of 10.8 feet of flow area was not maintained.

The inspectors noted that this configuration had been evaluated and authorized by EE 10-069, "Chemical Decontamination Implementation for Fuel Pool Cooling System," Revision 0. The inspectors reviewed this evaluation and noted that Section 4.5, "Internal Flooding," contained a discussion on the equipment's potential effects on the area. Specifically, the evaluation stated, in part, "Due to the location of the equipment the footprint area is not a concern. However, if the equipment is arranged such that it reduces the flow area to less than the west corridor width it will be necessary to remove the northwest torus hatch plug. Removing the northwest torus hatch plug will ensure the flooding calculations are not adversely impacted by the chemical decontamination equipment in the southwest area of the 903 feet elevation." The inspectors also reviewed the 3.3SAFE assessment, dated February 4, 2011. In this assessment the licensee documented that the chemical decontamination skid did not have a potential adverse effect on the internal flooding analysis. The inspectors noted that the 3.3SAFE assessment was potentially in conflict with Section 4.5 of the evaluation. Specifically, the direction to remove the northwest torus hatch plug in the event the skid blocked the analyzed flow path was in fact identification of a potential to impact internal flooding, and the licensee had not performed an assessment of the potential impact.

The inspectors were aware of station calculation NEDC 91-024, "Maximum Flooding in NE Quad (HELB)," Revision 0, which was the licensee's design basis internal flooding calculation for the 903 feet elevation of the reactor building. This analysis assumes; the equipment hatch for the southeast corner of the torus area is removed, and the following critical assumptions: the flow over three edges of the equipment hatch is free over fall (un-obstructed), an 18 foot channel width exist in both the north and south corridors, and that a 10.8 foot width channel exists in the west corridor.

These assumptions allowed the licensee to evaluate flooding depths assuming that water flowed across the floor through the north, west and south corridors and then flowed into the removed equipment hatch. Based on these and other inputs, this calculation determined that the maximum flooding depth of the 903 feet elevation would be 10.8 inches, with a minimum over fall into the torus area of 4.75 inches in depth. This maximum flood depth is acceptable because the lowest piece of safety related equipment, electrical instrumentation associated with the control rod drive system, on the 903 feet elevation is at a height of 11 inches.

The inspectors were not aware of any other analysis that had been performed to assess the northwest hatch, and noted that the assessment that had authorized placement of the equipment had not evaluated this new flow path to determine its adequacy. The inspectors expressed these concerns to the licensee. The licensee responded that an evaluation had been done, a qualitative review, and had looked only at the similarity of the size of the hatch openings relative to each other, and a formal quantitative evaluation had not been performed. At this, the inspector pointed out that the hand railing around the northwest hatch had a toe board at the bottom that would prevent the free over fall of water into the torus area and questioned its affect on the flood height. As a result of the inspector's observations and questions, the licensee initiated Condition Reports CR-CNS-2011-2182, CR-CNS-2011-2232, CR-CNS-2011-2240, CR-CNS-2011-2242 and CR-CNS-2011-2249 to capture these concerns in the station's corrective action program.

Subsequently, the licensee performed station calculation NEDC 11-027, "Maximum Flooding in NE/NW Quads and RB 903 with NW Torus Hatch Removed," Revision 0. This calculation assumed that the flow path to the southeast equipment hatch was completely blocked, and determined the resulting water depths and potential effects for several scenarios. Through this analysis the licensee determined that there would be changes to the previously analyzed flood depths, but safety related equipment would not be affected by these changes. Specifically, the safety related equipment located at a height of 11 inches, was in the southeast corner of the building and in this configuration would be isolated from the new higher levels. This calculation also established that the new higher levels would not reach the next critical level associated with internal flooding of the 903 foot elevation, 14.5 inches. This level represents the height of the ventilation grating atop the northwest quad (overflowing this flood dam could impact the operability of the residual heat removal and suppression pool cooling systems).

In the second example, on May 10, 2011, while performing a walkdown of the 903 feet elevation of the reactor building the inspectors identified that the licensee had installed meshing material around three of the four sides of the southeast equipment hatch. At this time, the northwest equipment hatch had been re-installed and the licensee was only crediting the southeast hatch for internal flood mitigation. The inspectors asked the licensee how this had been evaluated since the free over fall assumption in NEDC 91-024 was a critical assumption relative to water depths. As a result of the dialogue with the licensee, the inspectors determined that there had not been an assessment of the potential effect the meshing material could have. As a result of the inspector's observations and questions, the licensee initiated Condition

Reports CR-CNS-2011-5754, and CR-CNS-2011-5798. The licensee immediately removed the meshing material, which addressed the current operability concern, and is generating a calculation to evaluate past operability for this condition.

Analysis. The failure to comply with the requirements of station Procedure 3.3SAFE and identify and evaluate the potential adverse impact to the station's internal flooding analysis of several configuration changes 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. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the decision making component, in that the licensee failed to use conservative assumptions in decision making. Specifically, the licensee's qualitative analysis comparing the two hatches failed to take into account configuration differences associated with external structures around the hatch [H.1(b)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Contrary to the above, on March 8 and May 10, 2011, licensee personnel failed to follow the requirements of station Procedure 3.3SAFE, "Safety Assessments." Specifically, licensee personnel failed to identify the potential adverse impact to the stations internal flooding analysis of several configuration changes. 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-2010-9173, CR-CNS-2010-9678, CR-CNS-2011-2775 and CR-CNS-2011-3214, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011003-01, "Failure to Assess Potential Adverse Effects on Internal Flooding Analysis."

1R08 Inservice Inspection Activities (71111.08)

.1 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, and Boric Acid Corrosion Control (71111.08-02.01)

a. Inspection Scope

The inspectors observed two nondestructive examination activities and reviewed six nondestructive examination activities that included three types of examinations. The

inspectors also reviewed one examination with a relevant indication that had been accepted by licensee personnel for continued service.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	NVIR-BD-N8B	Ultrasonic
Residual Heat Removal	RHC-BJ-2	Ultrasonic

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Control Rod Drive Housing	CRD-50-27-1	Penetrant
Control Rod Drive Housing	CRD-50-23-1	Penetrant
Reactor Pressure Vessel	WD-1-JP1	Visual
Reactor Pressure Vessel	DF-1-JP14	Visual
	Torus Examination	Visual
Reactor Pressure Vessel	Top Guide Horizontal Aligner Pin	Visual

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspectors reviewed indications that were previously examined and verified that licensee personnel dispositioned the indications in accordance with the ASME Code and approved procedures. The inspectors also verified the qualifications of all nondestructive examination technicians performing the inspections were current.

The inspectors reviewed records for the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Radioactive Waste	RW-AOV-AO94 (09-387)	Gas Tungsten Arc Welding
Radioactive Waste	RW-AOV-AO95 (09-388)	Gas Tungsten Arc Welding

The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX requirements. The inspectors also verified, through observation and record review, that essential variables for the welding process were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.01.

b. Findings

No findings were identified.

.2 Identification and Resolution of Problems (71111.08-02.05)

a. Inspection scope

The inspectors reviewed 16 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering issues inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection operating experience. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On May 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:

- May 11, 2011, Residual heat removal service water booster pump B loose bearing cap and oil leak
- May 23, 2011, Diesel generator 1 fuel oil leak

- May 23, 2011, Diesel generator 2 voltage regulator card failure
- May 23, 2011, Review of the current (a)(3) periodic assessment

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 four quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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:

- March 21, 2011, Supplemental diesel generator tie in changed from Yellow to Orange outage risk window
- April 21, 2011, Diesel generator 2 voltage regulator card failure
- April 25, 2011, Failure to include risk assessment of on-line scope during RE26 outage risk review
- April 25, 2011, Residual heat removal pump D torus suction valve, RHR-MO-MO13D, failure to stroke
- April 29, 2011, Recirculation pump B emergent seal replacement

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 five maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- April 8, 2011, As found valve timing for diesel generator 2 following lobe replacement
- April 16, 2011, Diesel generator 1 fuel oil leak
- April 20, 2011, Evaluation of diesel generator 1 operability due to missing the timing requirement associated with Surveillance 3.8.7.1
- April 20, 2011, Residual heat removal A steam condensing piping has no vent
- April 27, 2011, Service water booster pump B oil leakage

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 five operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04

b. Findings

Introduction. The inspectors identified multiple examples of a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow the requirements of Procedure EN-OP-104, "Operability Determinations." Specifically, the inspectors identified examples in which operations failed to properly document the basis for operability when a degraded or nonconforming condition had been identified.

Description. Procedure EN-OP-104, "Operability Determinations," Revision 3, provides the guidance used by operations staff at Cooper Nuclear Station to perform operability determinations. Paragraph 4.2.1 requires, in part, that the shift manager "document the basis for operability when a degraded or nonconforming condition exists." The inspectors identified multiple examples of documented operability determinations that did not meet the requirements of this procedure.

In the first example, Condition Reports CR-CNS-2011-04643 and CR-CNS-2011-05230 documented an oil leak on the service water booster pump motor bearing on April 17 and April 26, 2011 respectively. The initial operability determinations written by the control room staff only evaluated the as-found oil level as sufficient to support operability. The inspectors challenged the control room staff with this issue as there was no evaluation of oil leakage rates versus the capacity of the bearing oil sump and if this oil leak would allow the motor to run for its required mission time. The operations staff initiated Condition Report CR-CNS-2011-4689 to document the inspectors' questions and Revision 2 of the operability determination was written, which declared the affected service water booster pump inoperable until it could be repaired. During maintenance to repair the oil leak the licensee discovered all four of the motor bearing cap bolts were loose and a gap existed between the bearing halves. This condition had existed since equipment installation in the plant during 2010 and was most likely due to a fabrication error.

The inspectors are continuing to evaluate the receipt inspection aspects of this issue to determine if a performance deficiency exists associated with the loose bolting.

In the second example, Condition Report CR-CNS-2011-06416 was initiated June 6, 2011, to document review of Part 21 Event Notice 46846 concerning ASCO Valve solenoid valves with U-rings fabricated with incorrect material, Nitrile instead of Ethylene Propylene. The Part 21 event notice noted that two valves with the incorrect Nitrile U-rings were found leaking while in service at two nuclear power plants. The licensee's condition report identified that two valves from the suspect lot were used in work orders for the same essential secondary containment isolation pilot valve in the licensee's plant. The control room staffs original operability determination noted that the secondary containment isolation valve was potentially affected equipment however there was no air leakage evident and no work history of air leakage and classified the operability code as, "Admin-NA". The inspectors challenged the control room staff with this issue as the Part 21 event notice identified a potential adverse condition of essential installed plant equipment, the affected secondary containment isolation valve. Subsequently, Revision 2 of the operability determination determined the condition was operable with compensatory measures to monitor the valve for leakage on a weekly basis until the valve is replaced with one verified to have the correct U-ring material. The licensee documented the inadequacy in the original operability determination in Condition Report CR-CNS-2011-06443.

During this same period the inspectors found that the licensee has also self-identified six similar issues of inadequate operability determinations and implemented individual coaching and department training to correct those examples. The inspectors have noted a large step change improvement of the licensee's overall operability determination program over the last few years.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to follow the requirements of Procedure EN-OP-104, "Operability Determinations." Specifically, the inspectors identified two examples in which operations failed properly to document the basis for operability when a degraded or nonconforming condition had been identified. The performance deficiency is more than minor because the condition

of performing inadequate operability determinations could become more significant if left uncorrected. Unrecognized degradation of essential equipment 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 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 was determined to have a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component, in that, the licensee failed to thoroughly evaluate problems such that the resolutions addressed causes and extent of conditions. Specifically, licensee personnel failed to thoroughly evaluate conditions adverse to quality and perform meaningful operability determinations [P.1(c)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Procedure EN-OP-104, "Operability Determinations," Revision 3, requires that the shift manager document the basis for operability when a degraded or nonconforming condition is identified. Contrary to this requirement on April 17, April 26, and June 6, 2011, the documented bases for operability of degraded conditions did not adequately support the operability position taken by the shift manager. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as documented by multiple condition reports listed in the description section of this report, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011003-02, "Failure to Follow Procedure Results in Inadequate Operability Determinations."

1R18 Plant Modifications (71111.18)

Permanent Modifications

a. Inspection Scope

The inspectors reviewed key parameters associated with energy needs, materials, replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the permanent modification identified as Cooper back-feed project.

The inspectors verified that modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; postmodification testing will maintain

the plant in a safe configuration during testing by verifying that unintended system interactions will not occur; systems, structures and components' performance characteristics still meet the design basis; the modification design assumptions were appropriate; the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample for permanent 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:

- April 2, 2011, Supplemental diesel post work test
- April 6, 2011, Cam replacement post work test diesel generator 2 run
- April 17, 2011, Service water booster pump B oil addition leak check
- May 2, 2011, Reactor recirculation train B refill activities
- May 19, 2011, High pressure coolant injection discharge piping reverse slop ultrasonic testing
- May 19, 2011, Residual heat removal pump discharge orifices ultrasonic testing

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 six postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the refueling outage, conducted March 13 through May 12, 2011, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense in depth. During the refueling outage, the inspectors monitored licensee controls over the outage activities listed below.

- Configuration management, including maintenance of defense in depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service.
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error.
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities.
- Monitoring of decay heat removal processes, systems, and components.
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system.

- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.
- Controls over activities that could affect reactivity.
- Maintenance of secondary containment as required by the technical specifications.
- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage.
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing.
- Licensee identification and resolution of problems related to refueling outage activities.

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

These activities constitute completion of one refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

- .1 Introduction. During performance of outage inspection activities, the inspectors reviewed a Green self-revealing, noncited violation of Technical Specification 5.4.1, resulting from workers who failed to follow radiation work permits requirements.

Description. On March 26, 2011, two of four individuals attempting to exit the radiologically controlled area received contamination alarms in the portal monitors. The individuals had just completed insulation work in a contaminated area. The senior radiation protection supplemental technician who briefed the workers did not recognize that the posting for the work area had changed during the previous 24 hours to a contaminated area. The radiation work permit required protective clothing for entry into a contaminated area. On entry to the area neither the radiation protection technician, nor the three insulations workers noticed the area was posted as a contaminated area and entered without protective anti-contamination clothing.

Two of the workers were contaminated on the face, shoes and clothing. The workers were decontaminated by showering. The workers then received whole body counts and no internal contamination was identified. The workers did not exceed their dose limits for the job. The dose received by the four workers varied between 0.6 to 8.8 mrem and the radiation work permit dose limit was 30 mrem.

The licensee human performance review determined that the radiation technician's overconfidence and lack of self-checking resulted in the workers not being properly briefed on plant conditions in the area that would affect their work activities, i.e. needing protective anti-contamination clothing. The inspectors noted that all the workers bypassed conspicuous postings that they were entering a contaminated area. To increase awareness, the licensee had this issue communicated throughout the radiation protection department.

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 in an area outside the scope of the radiation work permit, 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 was determined to have a cross-cutting aspect in the area of human performance, associated with the work control component, in that, the licensee failed to appropriately coordinate work activities by incorporating actions to address plant conditions that may affect work activities. Specifically, the radiation protection technician failed to verify current conditions prior to briefing workers on expected plant conditions that may affect work activities [H.3(b)].

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 the Appendix requires procedures for access control to radiation areas including a radiation work permit system. Procedure 9.ALARA.4, "Radiation Work Permit," Revision 14, implements this requirement and states, "It is each individual's responsibility to comply with the radiation work permit requirements." Radiation Work Permit 2011-073, "Rx Building Activities in High Rad Areas" and Radiation Work Permit 2011-078, "RP Activities in SWP Areas" do not allow entry into contaminated areas without protective clothing. Contrary to the above, on March 26, 2011, workers did not comply with the radiation work permit requirements when they entered a contaminated area without protective clothing. The licensee entered the issue into the corrective action program as Condition Report CR-CNS-2011-03311. 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 05000298/2011003-03, "Failure to Follow Procedure Results in Personnel Contaminations."

- .2 Introduction. The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.70, "Inspections," associated with the licensee's failure to ensure that the arrival and presence of NRC inspectors was not communicated to persons at the facility.

Description. On April 6, 2011, NRC inspector's entered the drywell to perform an unannounced walkdown of the area to observe general conditions, and in process

maintenance activities. To access the drywell, the inspector's processed through the posted contamination area where a high radiation area guard and a radiation protection technician were stationed. The inspector's informed the technician of their intended travel path and the amount of time they expected to be in the drywell as required for entry. The inspector's did not request that their presence or location be announced to any other personnel.

Following the inspectors entry into the drywell, a group of workers, one of whom was another NRC inspector, entered the contaminated area to access the drywell to perform an in-service inspection activity in the drywell. While processing through the contamination area the radiation protection technician, unaware that one of the individuals was another NRC inspector, informed the personnel that there were NRC inspectors in the drywell, in the basement, and told them to behave in the drywell.

The inspectors informed the licensee of their personnel's actions, and the licensee initiated Condition Report CR-CNS-2011-4124 to capture this issue in the stations corrective action program.

Analysis. Licensee personnel's action of announcing the presence and location of NRC inspectors during an unannounced walkdown inspection was a performance deficiency. The inspectors reviewed this issue in accordance with NRC Inspection Manual Chapter 0612 and the NRC Enforcement Manual. Through this review, the inspectors determined that traditional enforcement was applicable to this issue because the NRC's regulatory ability was affected. Specifically, the NRC relies on its ability to perform unannounced inspections to evaluate licensee performance, and communicating the presence and location of NRC inspectors affects their ability to perform these inspections, and as such the regulatory function is impacted. The inspectors determined that this finding was not suitable for evaluation using the significance determination process, and as such, was evaluated in accordance with the NRC Enforcement Policy. The finding was reviewed by NRC management and because the violation was determined to be of very low safety significance, was not repetitive or willful, and was entered into the corrective action program, this violation is being treated as a Severity Level IV noncited violation consistent with the NRC Enforcement Policy. The inspectors determined that there was no cross-cutting aspect associated with this finding because this issue was not indicative of current performance because the violation did not affect any of the safety culture components.

Enforcement. Title 10 CFR 10 CFR 50.70(b)(4) requires, in part, that the licensee shall ensure that the arrival and presence of an NRC inspector, who has been properly authorized facility access, is not announced or otherwise communicated by its employees or contractors to other persons at the facility unless specifically requested by the NRC inspector. Contrary to this, on April 6, 2011, the licensee failed to ensure that the arrival and presence of an NRC inspector, who was properly authorized facility access, was not announced or otherwise communicated by its employees or contractors to other persons at the facility. Specifically, a radiation protection technician stationed at the access point to the drywell informed other individuals entering the drywell of inspector's presence and location during an unannounced walkdown, without being requested to do so by the inspectors. The finding was evaluated in accordance with the

NRC's Enforcement Policy. The finding was reviewed by NRC management and because the violation was of very low safety significance, was not repetitive or willful, and was entered into the corrective action program, this violation is being treated as a Severity Level IV noncited violation, consistent with the NRC Enforcement Policy: NCV 05000298/2011003-04, "Communication of an NRC Inspector's Presence by Station Personnel."

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.

- April 17, 2011, Diesel generator 1 surveillance test
- April 28, 2011, Diesel generator 2 sequential load test
- May 2, 2011, Residual heat removal valve test
- May 6, 2011, Sample of leak rate check
- May 11, 2011, Service water surveillance test
- May 19, 2011, Core spray pump test
- May 24, 2011, Torus vacuum breaker test

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

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

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

This area was inspected to: (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures; (2) verify the licensee is properly identifying and reporting Occupational Radiation Safety Cornerstone performance indicators; and (3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation

protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the Occupational Radiation Safety Cornerstone
- The hazard assessment program, including a review of the licensee's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels
- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions
- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiologically controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability
- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage, and contamination controls; the use of electronic dosimeters in high noise areas; dosimetry placement; airborne radioactivity monitoring; controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools; and posting and physical controls for high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements
- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.01-05.

b. Findings

Introduction. The inspectors reviewed a Green self-revealing, noncited violation of Technical Specification 5.4.1, resulting from workers who failed to follow radiation work permit requirements.

Description. On February 14, 2011, two insulators working on the 931 feet elevation of the reactor building climbed from one scaffold up to a second scaffold and one individual received a dose rate alarm. The insulators did not leave the area, but began bagging some metal insulation and subsequently one individual received a dose warning (an

audible dosimeter alert which sounded at 80 percent of the worker's allowable dose). The insulators had climbed onto a scaffold in a high radiation area. The licensee was alerted to the situation when the workers exited the area, attempted to log off the access control computer system, and received a red warning screen.

A dose rate of 180 mrem/hour at 30 centimeters from the source of radiation was accessible on the second scaffold, according to survey record CR-CNS-1102-0150. A high radiation area is defined as an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 100 mrem in 1 hour at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates. The individuals worked in accordance with Radiological Work Permit 2011-005, "Routine Access/Management Observations," Task 1. This radiation work permit and task did not allow entry into high radiation areas and had dose and dose rate electronic alarming dosimeter setpoints of 10 mrem and 55 mrem/hour, respectively. The individuals had not been made aware of the dose rates in the high radiation area on the second scaffold before entry. The normal access to the second scaffold was by ladder. This ladder was properly posted as a high radiation area access point. However, the individuals gained access by climbing on piping to the second scaffold and did not see the posting on the ladder. The second scaffold did not have high radiation area posting to warn the individuals because the licensee assumed workers would use the ladder to access the area, instead of alternate means.

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 in an area outside the scope of the radiation work permit and not knowing the dose rates in the high radiation 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 work practices component because the individuals did not use self- or peer-checking before climbing to the second scaffold [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 the Appendix requires procedures for access control to radiation areas including a radiation work permit system. Procedure 9.ALARA.4 "Radiation Work Permit," Revision 14, implements this requirement and states, "It is each individual's responsibility to comply with the radiation work permit requirements." Radiation Work Permit 2011-005, "Routine Access/Management Observations," does not allow entry into high radiation areas. Contrary to the above, on February 14, 2011, insulators did not comply with the Radiation Work Permit 2011-005 requirements when they entered a high radiation area by climbing from scaffolding which was not in a high

radiation area to one which was in a high radiation area. As corrective action, the licensee posted the area around the second scaffold, searched for similar situations in the plant, and entered the issue into the corrective action program as Condition Report CR-CNS-2011-01318. (Following the exit meeting, the licensee initiated Condition Report CR-CNS-2011-03217 to document the occurrence had been identified as a violation.) 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 05000298/2011003-05, "Failure to Follow Radiation Work Permit Requirements."

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures ALARA. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/postjob reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

No findings were identified.

2RS03 In-plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

This area was inspected to verify in-plant airborne concentrations are being controlled consistent with ALARA principles and the use of respiratory protection devices onsite do not pose an undue risk to the wearer. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items items:

- The licensee's use, when applicable, of ventilation systems as part of its engineering controls
- The licensee's respiratory protection program for use, storage, maintenance, and quality assurance of National Institute for Occupational Safety and Health (NIOSH) certified equipment, qualification and training of personnel, and user performance
- The licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions, status of self-contained breathing apparatus staged and ready for use in the plant and associated surveillance records, and personnel qualification and training
- Audits, self-assessments, and corrective action documents related to in-plant airborne radioactivity control and mitigation since the last inspection

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

These activities constitute completion of the one sample as defined in Inspection Procedure 71124.03-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (MS05)

a. Inspection Scope

The inspectors sampled licensee submittals for the safety system functional failures performance indicator for the period from the 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, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73." The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports, and NRC integrated inspection reports for the period 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 safety system functional failure sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.2 Reactor Coolant System Leakage (BI02)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system leakage performance indicator for the period from the 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 logs, reactor coolant system leakage tracking data, 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 during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

.3 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity performance indicator for the period from the 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 reactor coolant system chemistry samples, technical specification requirements, 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. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the first through fourth quarters of 2010. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation area (greater than 1 rem/hour) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 mrem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hour) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of the occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the first through fourth quarters of 2010. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences 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

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of January through June 2011, although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments.

The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

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

b. Findings

Decision Making Substantive Cross-Cutting Issue Review.

In the 2009 mid-cycle assessment letter, dated September 1, 2009, the NRC staff identified a cross-cutting theme associated with the decision making component of the human performance area involving the use of conservative decision making [H.1 (b)]. At the time, the NRC did not identify a substantive cross-cutting issue because the licensee had appropriately recognized this theme and had implemented a range of corrective actions to address it. The 2009 end-of-cycle letter dated March 1, 2010, continued this theme but still did not identify a substantive cross-cutting issue, primarily because no findings with this common theme had been identified since the full implementation of the licensee corrective actions in mid-2009. However, six findings related to the use of conservative assumptions in decision making have occurred during the 2010 assessment period, all occurring following full implementation of the 2009 corrective actions. These findings occurred in the Initiating Events and Mitigating Systems Cornerstones. Examples included errors which led to an ice deflector pontoon barge being stored in the service water discharge canal, failing to monitor the performance of Agastat relays to ensure appropriate corrective actions were implemented, failing to ensure an adverse condition associated with safety-related station batteries was promptly corrected, and failing to properly assess and manage the risk associated with maintenance in the switchyard.

The NRC determined that twice during the last half of the 2010 assessment period the licensee initiated corrective action documents that acknowledged the decision making theme. However neither of those corrective action documents resulted in implementation of adequate corrective actions to mitigate the theme. The lack of action prompted a NRC concern with the licensee's scope of effort and progress in addressing the cross-cutting theme. Due to the continued cross-cutting theme associated with the use of conservative assumptions in decision making and NRC concerns with the licensee's scope of effort and progress in addressing the common theme, the February 3, 2011, end-of-cycle performance review opened a substantive cross-cutting issue in the human performance area associated with the decision making component related to the use of conservative assumptions in decision making [H.1 (b)].

This baseline inspection semi-annual trend continues to monitor for sustainable performance improvements as evidenced by effective implementation of an appropriate corrective action plan that results in no safety significant inspection findings and a notable reduction in the overall number of inspection findings with the same common

theme. There were no decision making cross-cutting issues in the 2011 first quarter inspection report.

The licensee determined the common causes that contributed to decision making and assumptions problems are:

- Weaknesses in Nuclear Safety Culture Principle 4, Decision making reflects safety first.
- Weaknesses in Nuclear Safety Culture Principle 6, A questioning attitude is cultivated.
- Inadequate monitoring and oversight of performance related to decision making and assumptions.

The licensee has developed actions to monitor lower level decision making indicators and case study training to address these causes with each department along with measurable objectives to monitor the effectiveness of the training. These actions are still in progress and not scheduled to complete until the end of July 2011. Based on the need to allow time to observe the effectiveness of the licensee improvement plan demonstrated by sustained improvement in human performance decision making behavior the NRC inspectors' baseline inspection program will continue to monitor for sustainable performance improvements through the rest of 2011.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered into the licensee's corrective action program, the inspectors recognized a corrective action item documenting resolution of issue associated with coupling failures of the service water zurn strainers. The inspectors selected this issue for review because of the past history associated with coupling failures, and because the failure to properly identify and correct conditions adverse to quality in a timely manner 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

Introduction. The inspectors documented a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to assure that the applicable design basis for applicable structures, systems, and components were correctly translated into specifications, procedures, and instructions.

Description. The inspectors reviewed Condition Report CR-CNS-2010-2213. This condition report had been initiated because on March 27, 2010, the train A service water zurn strainer wiper arm motor-to-gear box coupling failed when the strainer was placed in continuous run. When this coupling failed, the strainer motor was not able to perform its function of rotating the wiper arm for strainer backwash, an essential function. The licensee initiated Condition Report CR-CNS-2010-2213 to capture this issue in the stations corrective action program. A corrective action from this condition report directed that a root cause evaluation of this issue be performed.

On May 14, 2010, the licensee completed their root cause evaluation. The licensee's evaluation concluded that the failure of the wiper arm motor-to-gear box coupling was due to the inadequate design, and design control configuration of the reduction gear to motor shaft. The licensee determined that this condition had existed since initial installation of this component, and there were several previous failures of these couplings documented in their maintenance history. The licensee took action to correct the inadequate design aspect of the shaft by lengthening it, and staking the key to the shaft. The licensee is also pursuing a design change to replace the zurn strainers.

Analysis. The licensee's failure to ensure that design requirements were correctly translated into installed plant equipment 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 inspectors determined that a Phase 2/3 assessment was required because this was a design or qualification deficiency that did result in a loss of operability or functionality. The inspectors received support from the regional senior reactor analyst to evaluate this issue. As a bounding analysis, the analyst assumed: (1) the only time this design deficiency would cause an issue would be when strainer backwash was required due to debris loading; (2) the licensee had procedures already in place for manual actions in the event of a coupling failure; (3) the licensee would implement these actions before the strainer became inoperable due to debris loading; and (4) these actions were not complex and could easily be implemented. Given these assumptions the analyst determined that the finding was of very low safety significance (Green). This finding did not have a cross-cutting aspect because the most significant contributor did not reflect current license performance.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, measures be established to assure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2 and as specified in the license application, for those components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, from initial construction through March 27, 2010, the licensee failed to ensure that the design requirements for the service water zurn strainer's reduction gear-to-motor shaft were correctly translated into installed plant equipment. Because this finding is of very low safety significance and has been entered into the corrective action program as Condition Report CR-CNS-2010-2213, 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 Correctly Translate Design Requirements into Installed Plant Configuration."

40A3 Event Follow-up (71153)

.1 Emergency Declaration Due to External Flooding

a. Inspection Scope

On June 19, 2011, inspectors responded to the site in response to the licensee's declaration of a Notification of an Unusual Event due to the Missouri River level reaching 899 feet Mean Sea Level due to external flooding. The inspectors arrived on site, performed extensive walkdowns of all primary and secondary flood barriers, observed plant operations and conducted several interviews with operations, maintenance and management personnel. The inspectors also reviewed the initial licensee notification to verify that it met the requirements specified in NUREG-1022, "Event Reporting Guidelines," Revision 2

b. Findings

No findings of were identified.

.2 (Closed) LER 050002982010004, "Loss of Safety Function for Emergency Diesel Generators"

a. Inspection Scope

On August 19, 2010, while emergency diesel generator 2 was inoperable for planned maintenance, steam exclusion boundary door N103 and N104 were propped open in support the maintenance activities on emergency diesel generator 2. Door N103 is the rated steam exclusion boundary door for emergency diesel generator 1. With door N103 open, if a main steam line rupture were to occur in the turbine building, the steam could enter the emergency diesel generator 1 room which may affect the operability of the diesel. This resulted in an unanalyzed condition, as the emergency diesel generator rooms had not been evaluated or analyzed for a high energy line break. With emergency diesel generator 2 already declared inoperable for planned maintenance,

having emergency diesel generator 1 inoperable also created condition that could have prevented the fulfillment of a safety function.

b. Findings

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," associated with the licensee's failure to perform an adequate risk assessment for a planned maintenance activity.

Description. On August 19, 2010, the plant was in Mode 1, with emergency diesel generator 2 inoperable for planned maintenance. Part of this maintenance directed that a hose be run from emergency diesel generator 2 to the turbine building to facilitate draining the jacket water cooling system. The routing of the hose blocks open doors N103 (security and steam exclusion boundary door for both emergency diesel generators) and N104 (door between number 1 and 2 emergency diesel generator rooms). In preparation for this activity, a security officer was stationed at the door to act as the compensatory measure for both the disabled security door and steam exclusion boundary door features.

Engineering personnel questioned the acceptability of doors N103 and N104 being blocked open. Specifically, they noted that in the event of a high energy line break with the doors open steam would enter both emergency diesel generator 1 and 2 rooms, which could make the emergency diesel generator 1 inoperable, resulting in an unanalyzed condition. Condition Report CR-CNS-2010-5972 was initiated to capture this concern in the station's corrective action program.

In response to this concern operators performed an operability determination, and documented it in the condition report. They determined that the hose was in use for a planned maintenance activity and since compensatory actions were established per Station Procedure 0.16 and Standing Order 2010-07, at all times during which the doors were open, emergency diesel generator 1 was operable for this condition.

Subsequently, more information was provided to operations concerning the basis of Procedure 0.16 which caused operators to determine that both the emergency diesel generators had in fact been inoperable, and that constituted a reportable condition. The licensee performed a root cause evaluation of this issue, and submitted Licensee Event Report 2010-004. Their evaluation 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.

Inspectors performed a review of this issue to close out Licensee Event Report 2010-004. During their review the inspectors questioned the licensee's identified root cause. Specifically, they agreed that the use of a probabilistic risk assessment as a basis for an operability determination was an issue, but disagreed that this was the root cause. Specifically, the inspectors determined that the risk assessment that provided

the basis for the procedural guidance used by the licensee for controlling steam exclusion boundary doors was inadequate and appeared to be the root cause of the issue.

The inspectors noted that the site's probabilistic risk assessment group had issued Memo PRA05004, "Risk Evaluation of Open Steam Exclusion Boundary Doors," on February 16, 2005. This memo was written to provide a bounding risk analysis for maintenance activities that affected steam exclusion boundary doors (hazard barriers). This was in response to NRC Regulatory Information Summary 2001-009, "Control of Hazard Barriers," which established the NRC position regarding the requirement to assess and manage the risk associated with disabling a hazard barrier in accordance with 10 CFR 50.65(a)(4). In this memo the probabilistic risk assessment group determined that the planned unavailability of the steam exclusion function associated with credited steam exclusion boundary doors for up to 90 days was not risk significant.

The inspectors determined that this position had been translated into station Procedure 0.16 as follows:

Section 4.4.5.2 allowed for no compensatory measures to be established if the steam exclusion boundary door is impaired for maintenance. However if compensatory measures are applied they should be commensurate with the safety significance of impairing a steam exclusion boundary door or blocking it open. (i.e. Briefing Security Guard on the importance of removing the hose and closing the door in the event of a pipe break was an appropriate compensatory measure).

Section 4.4.5.3, stated, in part, if a steam exclusion boundary door is impaired (open or otherwise out of normal position), the door can be impaired for a period up to 90 days. This allows maintenance, surveillance, etc., to occur in support of plant needs.

The inspectors determined that the licensee had used this guidance to both allow the activity and then review the operability of the equipment in response to the activity.

The inspectors determined that the assessment performed in Memo PRA05004 was not correct, and that the licensee had failed to adequately assess and manage the risk associated with disabling a hazard barrier. Specifically, the licensee failed to recognize the potential impact on the availability of the equipment being protected by the barriers and factor this into the overall risk. The licensee initiated Condition Report CR-CNS-2011-7660 to capture this concern in the stations corrective action program.

Analysis. The licensee's failure to adequately assess and manage the risk of planned maintenance activities 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, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding was determined to have very low safety significance. Specifically, Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The senior reactor analyst performed a bounding analysis and determined that the probability that a high-energy line breaks, causing the failure of both emergency diesel generators and initiating a consequential loss of offsite power can be calculated as 3.0×10^{-7} . Given that the change in core damage frequency would be lower than this probability, the analyst determined that the finding was of very low safety significance (Green). The inspectors determined that this finding did not represent current performance because the guidance that formed the basis for the licensee's decision making was developed and approved over two years ago. (Section 4OA3).

Enforcement. Title 10 CFR 50.65(a)(4), states in part, that before performing maintenance activities (including, but not limited, to surveillance, postmaintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, on August 19, 2010, operations and work control personnel failed to adequately assess and manage the increase in risk associated with disabling the emergency diesel generator steam exclusion boundary door. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2010-5972, this violation is being treated as a noncited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011003-07, "Failure to Adequately Assess and Manage Risk When Disabling A Hazard Barrier."

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000298/2010005-05, Diesel Generator Overspeed Governor Loose Bolting Issue

a. Inspection Scope

In NRC Inspection Report 05000298/2010005 inspectors opened an unresolved item concerning the loose bolting issue on the over speed governor of emergency diesel generator 2. Specifically, the issue concerns past operability of the diesel, adequacy of previous evaluations and corrective actions taken by the licensee, and procedure quality and use.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow written work instructions. Specifically, the inspectors identified that maintenance personnel, when unable to torque emergency diesel generator bolting following their written instructions used unapproved alternate methods. These methods

contributed to the subsequent loosening of the bolting and degraded the capability of the emergency diesel generator.

Description. On September 9, 2009, during its monthly operability run emergency diesel generator 2 was shut down due to vibration of the overspeed governor. The licensee found the overspeed trip governor drive unit flange loose where it attaches to the engine block due to nuts loose on the studs. All eight nuts were loose and oil was leaking from the joint. During retightening of the loose joint workers found they could not fit the torque wrench on six of the eight nuts due to mechanical interference from surrounding equipment. Unable to follow their written instructions and procedures the workers failed to stop and proceeded to use an alternate method to wrench tighten the six hard to access nuts. This received a perfunctory review after the work was completed. Eleven months later, on August 17, 2010, during a corrective action activity to increase the torque in response to the 2009 event, six of the eight nuts on this same flange were found loose again. The subsequent investigation into this 2010 degraded condition of the emergency diesel generator found the root cause to be the, "unacceptable alternate method for torquing the fasteners (i.e., pull-of-the-wrench), which resulted in uneven application of torque and uneven gasket crush."

The licensee's 2010 root cause investigation self-identified the failure to prevent recurrence of a significant condition adverse to quality, as repeated work schedule delays that resulted in the untimely corrective action to increase the nut torque and a lack of bolt lubrication as a contributing cause due to inadequate maintenance torque procedures. The unacceptable alternate method of torquing the fasteners is discussed repeatedly throughout the root cause report with no investigation into the workers failure to stop when unable to perform the procedure as written. The report did state that the workers did not use appropriate human error prevention tools to self check prior to using the alternate nut tightening method and implemented a corrective action to exclude the pull-of-the-wrench method from an applicable procedure. The inspectors repeatedly questioned this procedural noncompliance performance deficiency with station management during their review of this issue during the first half of 2011 with no condition report initiated until after the inspectors conducted the NRC baseline inspection second quarter exit meeting on July 7, 2011.

Licensee Administrative Procedure 0.40, "Work Control Program," Step 6.4.7 states that, "If the Work Order cannot be performed as written, the Worker shall stop work and contact the Supervisor." Additionally, Maintenance Procedure 7.2.71, "Bolting and Torque Program," Step 3.4 specifies how the wrench tighten method shall be performed and states, "Fasteners may be wrench tightened when a torque value is not specified". The inspectors reviewed Work Order 4719816 Confirmation 2292194/1, dated September 9, 2009, performed from 12:00 p.m. to 6:00 p.m., that documented the inability to torque six of eight studs and the use of the pull-of-the-wrench method. Subsequent confirmations in the work order document a post work revision to allow the alternate method, a condition report that documented the alternate method, and post engineering review of the method. This 2009 documentation was not clear and created confusion in the licensee investigation of the exact methodology used.

Licensee corrective actions to address the loosening nuts include increased torque values, improved procedures to ensure proper lubrication during torquing activities, ultrasonic monitoring and additional bolt torque checking activities. The license has initiated Condition Report CR-CNS-2011-07653 to address the failure to follow procedure for the bolt torque activity.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to follow the requirements of Administrative Procedure 0.40, "Work Control Procedure." Specifically, the inspectors identified licensee personnel did not stop work when unable to perform the emergency diesel generator torque instructions as written but proceeded to use an alternate method. The performance deficiency is more than minor since this failure to follow procedures resulted in a degraded emergency diesel generator which 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). The finding was evaluated using Manual Chapter 0609.04, "Phase 1—Initial Screening and Characterization of Findings," and was determined to be of very low safety significance (Green) because there was not a design or qualification deficiency that resulted in a loss of operability or functionality, it did not create a loss of system safety function or of a single train for greater than the technical specification allowed outage time, it did not represent an actual loss of risk significant equipment, and it did not affect seismic, flooding, or severe weather initiating events. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the work practices component, in that, personnel do not proceed in the face of uncertainty or unexpected circumstances. Specifically, when unable to torque emergency diesel generator bolting by following their written procedures, licensee personnel proceeded in the face of uncertainty by using alternate torque methods [H.4(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Licensee Administrative Procedure 0.40, "Work Control Program," Step 6.4.7 states that, "If the Work Order cannot be performed as written, the Worker shall stop work and contact the Supervisor." Contrary to this requirement, on September 9, 2009, licensee personnel failed to stop when unable to perform the torque procedure as written and then proceeded with an alternate method contributing to subsequent loosening of bolts and degradation of emergency diesel generator capacity. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2011-07653, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011003-08, "Failure to Follow Procedure Results in Degraded Emergency Diesel Generator."

.2 (Open) NRC Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope

The inspectors reviewed whether the onsite documentation, system hardware, and licensee actions were consistent with the information provided in their response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." Specifically, the inspectors evaluated whether the licensee has implemented or was in the process of implementing the commitments, modifications, and programmatically controlled actions described in their response to NRC Generic Letter 2008-01. The inspection was conducted in accordance with Temporary Instruction 2515/177 and considered the site-specific supplemental information provided by the Office of Nuclear Reactor Regulations.

Inspection Documentation

The inspectors evaluated licensee actions related their licensing basis, design, testing, and corrective actions. The documentation of the inspection effort and any resulting observations are below.

Licensing Basis: The inspectors reviewed selected portions of licensing basis documents to verify that they were consistent with the Office of Nuclear Reactor Regulation assessment report and that they were processed by the licensee. The verification included reviewing selected portions of the technical specifications, technical specifications bases, final safety analysis report, and technical requirements manual. The inspectors reviewed applicable documents that described the plant and plant operation, such as calculations, piping and instrumentation diagrams, procedures, and corrective action program documents, to determine whether the licensee addressed the areas of concern and revised the documents, if needed, following plant changes. When changes had not been implemented, the inspectors confirmed that the licensee had established an action in their corrective action program to track the required changes. The inspectors confirmed that the licensee performed surveillance tests at the frequency required by the technical specifications. The inspectors verified that the licensee tracked their commitment to evaluate and implement any changes that will be contained in the technical specification task force traveler.

Design: The inspectors reviewed selected design documents, performed system walkdowns, and interviewed plant personnel to verify that the licensee addressed the design and operating characteristics. Specifically:

- The inspectors verified that the licensee had identified the applicable gas intrusion mechanisms for their plant. At the time of this inspection, the licensee had not developed their gas accumulation management program. The inspectors confirmed that the licensee had listed the applicable gas intrusion mechanisms in their 9-month response to NRC Generic Letter 2008-01.

- The inspectors verified that the licensee had established void acceptance criteria consistent with the void criteria identified as acceptable by the Office of Nuclear Reactor Regulation. If the licensee identified void acceptance criteria different than that identified as acceptable by the Office of Nuclear Reactor Regulation, then the inspectors verified that the licensee has justified the deviations. The inspectors also confirmed that (1) the licensee addressed the effect of pressure changes during system startup and operation since such changes could significantly affect the void fraction from the initial value; and (2) the range of flow conditions evaluated by the licensee was consistent with the full range of design basis and expected flow rates for various break sizes and locations. The inspectors also reviewed the operability of residual heat removal steam condensing mode piping in Section 1R15 of this inspection report.
- The inspectors selectively reviewed applicable documents, including calculations, and engineering evaluations with respect to gas accumulation in the subject systems. Specifically, the inspectors verified that these documents addressed venting requirements, aspects where pipes are normally void such as some spray piping inside containment, void control during system realignments, and the effect of debris on strainers in containment emergency sumps causing accumulation of gas under the upper elevation of strainers and the impact on net positive suction head requirements.

At the time of the inspection, the inspectors determined that the licensee had not formally accepted the design calculations that determined the size of the voids possible on the suction and discharge of the emergency core cooling system pumps.

- The inspectors also verified that the information obtained during the licensee walkdowns was consistent with the items identified during the inspector's independent walkdown.
- In addition, the inspectors verified that the licensee had piping and instrumentation diagrams and isometric drawings that described the core spray, high pressure coolant injection, and residual heat removal system configurations and had confirmed the accuracy of the drawings. The inspectors considered the following during review of selected portions of the isometric drawings:
 1. High point vents were identified.
 2. High points without vents were recognizable.
 3. Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat exchangers, improperly sloped piping, and under closed valves, were described in the drawings or in referenced documentation.
 4. Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines were identified.

5. All pipes and fittings were clearly shown.
6. The drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the corrective action program for resolution.

The inspectors conducted a similar walkdown of selected portions of the residual heat removal and high pressure coolant injection systems as documented in Section 1R04 of this inspection report. Further, the inspectors walked down the high pressure coolant injection system as documented in Inspection Report 05000298/2011002; the train A core spray system as documented in Inspection Report 05000298/2010003; and selected portions of the modification that installed vents in the core spray, high pressure coolant injection and the residual heat removal system, as documented in Inspection Report 05000298/2010002.

- The inspectors verified that licensee had completed the walkdowns for the emergency core cooling systems. The inspectors selectively verified that information obtained during the licensee initiated corrective action documents for discrepancies identified during walkdowns. The inspectors identified three instances of failure to initiate corrective action documents related to discrepancies identified during their system walkdowns. The inspectors documented these discrepancies in Section 4OA5.2.b.1.

Testing: The inspectors reviewed selected surveillance procedures and results to verify that the licensee had approved and used procedures that appropriately addressed the issue of gas accumulation and/or intrusion in the subject systems. This review included the verification of procedures used for conducting surveillances and determination of void volumes to ensure that the void criteria were satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance. Also, the inspectors reviewed procedures used for filling and venting following conditions which may have introduced voids into the subject systems to verify that the procedures addressed testing for such voids and provided processes for their reduction or elimination.

The inspectors identified that the periodic monthly surveillance tests that require operators check for air in the emergency core cooling systems and the quarterly pump inservice test procedures allowed operators to vent air or air/water mixture for 15 seconds before they had to initiate a condition report and require corrective actions. The inspectors identified one instance related to inadequate corrective actions related to the practice of venting emergency core cooling systems without determining the impact on operability. The inspectors documented this deficiency in Section 4OA5.2.b.3.

Corrective Actions: The inspectors reviewed selected corrective action program documents to assess how effectively the licensee addressed the issues in their corrective action program associated with Generic Letter 2008-01. In addition, the inspectors verified that selected corrective actions identified in the nine-month and supplemental responses and verified that the licensee tracked commitments in their corrective action program.

The inspectors determined licensee had modified fill and vent procedures, had calculations that determined the allowed void sizes on the pump suction and discharges, installed vent valves where necessary. However, the licensee had not developed a formal gas accumulation management program at the time of this inspection. The inspectors confirmed that the licensee had a corrective action program item tracking the need to formalize the calculations and to develop a gas accumulation management program. The inspectors noted that the lack of a formal program resulted in the failure to have formally approved calculations and a trending program. The inspectors determined that the corporate procedure that prescribed developing a gas accumulation management program followed industry guidance and had an action due date to be upgraded to the most current guidance by June 30, 2011.

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

Based on this review, the inspectors concluded that there is reasonable assurance that the licensee will complete all outstanding items and incorporate this information into the design basis and operational practices. Therefore, this temporary instruction is considered closed.

b. Findings

1. Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for the failure of licensee personnel to follow the requirements of Procedure 0.5, "Conduct of the Condition Report Process." Specifically, licensee personnel failed to initiate condition reports for adverse conditions related to the inability to remove air from emergency core cooling system piping. Licensee personnel identified that high pressure coolant injection system had an incorrect slope and that the core spray system had concentric reducers that could trap gas; however, personnel failed to initiate a condition report that documented the deficiency.

Description. Paragraph 7.1.3 of Procedure 0.5, "Conduct of the Condition Reporting Process," provides the following standard for condition report initiation: "Employees and contractors are encouraged to write condition reports for a broad range of problems. Problems reported must include, but are not limited to, Adverse Conditions." The procedure defines adverse conditions as "an event, defect, characteristic, state, or activity that prohibits or detracts from safe, efficient nuclear plant operation. Adverse conditions include non-conformances, conditions adverse to quality, and plant reliability concerns." The inspectors identified three occasions when licensee personnel failed to initiate condition reports for adverse conditions as required by Procedure 0.5.

As part of the resolution for NRC Generic Letter 2008-01, system engineers walked down the physical piping in the plant and compared the pipe configuration to isometric drawings. During review of hydraulic profiles and piping and instrumentation drawings, the inspectors questioned configurations and the disposition of the configurations for the emergency core cooling systems. In the first example, the inspectors identified an incorrect slope existed in a high pressure coolant injection line that could trap gas and result in an adverse effect on plant equipment. Upon further review, the licensee

determined that they had identified this deficiency but that no condition report had been initiated. Walk Down Report HPCI-8 specified improper venting in a horizontal pipe run because of an elevation difference from 875 feet 4 inches to 874 feet 11 inches that created a localized high point. During this inspection, system engineers re-measured the piping and confirmed that the piping had an incorrect slope. The licensee confirmed that no condition report had been initiated during the original inspections and documented this deficiency in Condition Report CR-CNS-2011-05977.

In the second example, inspectors questioned whether a vent had been installed at the flow orifices on the discharge of each residual heat removal pump. Walk Down Reports RHRB-3 and RHRA-8 described that the residual heat removal flow orifices had the potential to trap gas. Since no condition report had been initiated to document the potential for these flow orifices to trap gas voids, the licensee documented this deficiency in Condition Report 2011-05975. Initially, the licensee determined that these flow orifices had both vent and drain holes from review of Drawing 145C3120, "Orifice Flange & Plate." Additional review by the licensee determined that the orifice plates would not be self venting and initiated Condition Report 2011-06820 to document this configuration deficiency. Further questioning by the licensee determined that the orifice plates contained only one weep hole at the bottom of the orifice plate, as verified by earlier maintenance activities.

In the third example, inspectors questioned whether a vent had been installed at the reducers and the slope of the line verified. Walk Down Reports CSA-1 and CSB-1 described that the core spray suction piping had the potential to trap gas. Since no condition report had been initiated to document the potential for this piping to trap gas voids, the licensee documented this deficiency in Condition Report CR-CNS-2011-05979.

The inspectors determined that these examples represented a failure to comply with the requirements of Procedure 0.5, in that these non-conformances had not been entered into the corrective action program. The licensee documented this condition in Condition Reports CR-CNS-2011-05977, CR-CNS-2011-06820 and CR-CNS-2011-05979.

Analysis. The performance deficiency associated with this finding involved failure of personnel to follow the requirements of Procedure 0.5. Specifically, licensee personnel failed to initiate condition reports for adverse conditions that could result in gas voids in the emergency core cooling systems that could affect operability. These examples are more than minor because the condition of not initiating condition reports for adverse conditions could become more significant if left uncorrected. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because neither example resulted in any loss of safety function of any technical specification required equipment. This finding was determined to have a cross-cutting aspect in the problem identification and resolution area associated with the corrective action program component because licensee personnel failed implement a corrective action program with a low threshold for identifying issues [P.1(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Procedure 0.5 requires that licensee personnel initiate condition reports for adverse conditions, including nonconforming conditions. Contrary to this requirement, in August 2008, engineers failed to initiate condition reports for adverse conditions as specified in Procedure 0.5. Specifically, personnel documented incorrect slopes in the high pressure coolant injection and core spray systems that could trap gas and potentially affect system operability and failed to initiate condition reports. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Reports CR-CNS-2011-05977, CR-CNS-2011-06820 and CR-CNS-2011-05979, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000298/2011003-09, "Failure to Initiate Condition Reports For Nonconformances Identified During System Walk Downs."

2. Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure of licensee personnel to take actions to promptly correct a condition adverse to quality. Specifically, the licensee did not take any interim actions to eliminate procedure steps that allowed venting of emergency core cooling systems without determining the amount of gas accumulated and the potential impact on system operability.

Description. The inspectors reviewed the 31-day test procedures used to vent air from the emergency core cooling systems. The inspectors determined that the surveillance procedures allowed operators to vent for a minimum of 15 seconds prior to initiating a condition report. The procedures did require that operators document the amount of time that air was vented. The inspectors determined that the licensee had evaluated the operability of the system each time they documented the amount of time they vented the emergency core cooling systems in condition reports.

The inspectors noted that the licensee was not ensuring the operability of emergency core cooling systems by measuring the amount of gas vented each time they perform the surveillance procedure to allow trending of gas accumulation in the systems. Instead station procedure allowed operators to vent for 15 seconds without initiating a condition report. The licensee had previously identified this issue in Condition Report CR-CNS-2011-05625. Condition Report CR-CNS-2011-05625 included a recommended corrective action to measure the gas vented anytime the surveillance was performed. Since the licensee had an existing condition report that documented this issue the inspectors considered this a minor procedure violation of Regulatory Guide 1.33 regarding test procedures.

During the exit meeting for this inspection on June 27, 2011, the inspectors questioned whether the licensee had taken interim corrective actions to stop venting for 15 seconds prior to initiating a condition report because of the potential impact on emergency core cooling system operability. The licensee determined that no interim corrective actions had been taken to ensure the amount of entrained gas is measured and initiated

Condition Report 2011-07269. The inspectors considered this a violation of 10 CFR Part 50, Appendix B Criterion XVI for failure to promptly implement corrective actions.

Analysis. The performance deficiency associated with this finding involved the failure to correct a condition adverse to quality. This finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of the emergency core cooling systems to respond to initiating events and prevent undesirable consequences. Specifically, licensee personnel failed to promptly correct the previously identified condition adverse to quality of not tracking emergency core cooling system gas accumulation and its potential effects on system operability during surveillance testing. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609.04, "Phase 1—Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because it was not a design or qualification deficiency confirmed not to result in loss of operability or functionality; did not result in loss of a safety function, did not result in loss of safety function of a single train for longer than its allowed outage time, did not result in loss of a risk-significant non-technical specification system per 10 CFR 50.65, and did not screen as potentially risk significant because of a seismic, flooding or severe weather initiating event. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the resources component, in that, the licensee failed to provide maintenance of design margins. Specifically, the licensee did not ensure that station procedure were adequate to assure nuclear safety, in that they did require measuring of the amount of entrained gas and any impact on equipment operability [H.2(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, requires, in part, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected." Contrary to this requirement, as of June 27, 2011, the licensee had not established measures to promptly correct a condition adverse to quality. Specifically, the licensee had not taken interim actions to ensure that personnel would identify and evaluate the impact of any entrained gas on emergency core cooling system operability. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report 2011-07269, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2011003-10, "Failure to promptly correct an adverse condition related to emergency core cooling system venting."

.3 (Closed) NRC Temporary Instruction 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event"

a. Inspection Scope

The inspectors assessed the activities and actions taken by the licensee to assess its readiness to respond to an event similar to the Fukushima Daiichi nuclear plant fuel

damage event. This included: (1) an assessment of the licensee's capability to mitigate conditions that may result from beyond design basis events, with a particular emphasis on strategies related to the spent fuel pool, as required by NRC Security Order Section B.5.b issued February 25, 2002, as committed to in severe accident management guidelines, and as required by 10 CFR 50.54(hh); (2) an assessment of the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63 and station design bases; (3) an assessment of the licensee's capability to mitigate internal and external flooding events, as required by station design bases; and (4) an assessment of the thoroughness of the walkdowns and inspections of important equipment needed to mitigate fire and flood events, which were performed by the licensee to identify any potential loss of function of this equipment during seismic events possible for the site.

b. Findings

Inspection Report 05000298/2011007 (ML11133A168) documented detailed results of this inspection activity. Following issuance of the report, the inspectors conducted detailed follow-up on selected issues. One finding was identified during this follow-up inspection and is documented in Section 1R06 of this inspection report.

.4 (Closed) NRC Temporary Instruction 2515/184, "Availability and Readiness Inspection of Severe Accident Management Guidelines (SAMGs)"

The inspectors reviewed the licensee's severe accident management guidelines (SAMGs), implemented as a voluntary industry initiative in the 1990's, to determine (1) whether the SAMGs were available and updated; (2) whether the licensee had procedures and processes in place to control and update its SAMGs; (3) the nature and extent of the licensee's training of personnel on the use of SAMGs; and (4) licensee personnel's familiarity with SAMG implementation.

The results of this review were provided to the NRC task force chartered by the Executive Director for Operations to conduct a near-term evaluation of the need for agency actions following the Fukushima Daiichi fuel damage event in Japan. Plant-specific results for Cooper Nuclear Station were provided as Enclosure 5 to a memorandum to the Chief, Reactor Inspection Branch, Division of Inspection and Regional Support, dated May 26, 2011 (ML111470264).

40A6 Meetings

Exit Meeting Summary

On March 25, 2011, the inspectors presented the results of the radiation safety inspections 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 inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On April 8, 2011, the inspectors presented the inspection results of the review of inservice inspection activities to Mr. D. Willis, General Manager of Plant Operations, and other members

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

On June 23, 2011, the inspectors presented the inspection results to Mr. D. Vanderkamp, Manager, Regulatory Affairs and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

On July 7, 2011, the resident 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 inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as noncited violations.

- Technical Specification 5.4.1.a "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a, requires, in part, that maintenance that can affect the performance of safety-related equipment should be performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, in September 2009, the licensee failed to implement written procedures, documented instructions, or drawings appropriate to the circumstances for maintenance that can affect the performance of safety-related equipment. Specifically, the licensee failed to ensure that the work order used when reinstalling the overspeed governor bolting on emergency diesel generator 2 required the use of lubrication, which resulted in the bolting coming loose and resulting in the diesel being declared inoperable. The failure to properly plan maintenance activities on the emergency diesel generator 2 was a performance deficiency. Using Manual Chapter 0609.04, "Phase 1—Initial Screening and Characterization of Findings," the inspectors determined this finding to be of very low safety significance because there was not a design or qualification deficiency that resulted in a loss of operability or functionality, it did not create a loss of system safety function or of a single train for greater than the technical specification allowed outage time, it did not represent an actual loss of risk significant equipment, and it did not affect seismic, flooding, or severe weather initiating events.
- Title 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." Contrary to the above, the

licensee failed to promptly identify and correct a condition adverse to quality, associated with bolted fasteners on emergency diesel generator number 2. Specifically, the licensee had postponed implementation of a corrective action, from a previous loose bolting issue associated with the overspeed governor, to perform a 100 percent torque check of all fasteners on the diesel from June until August 2010 due to conflicting work week schedules. As a result, when the bolting was checked the bolts for the overspeed governor were found loose again, and the licensee determined that the loose bolts had been a result of improper maintenance performed when reassembling the joint from the previous bolting issue. Using Manual Chapter 0609.04, "Phase 1—Initial Screening and Characterization of Findings," the inspectors determined this finding to be of very low safety significance because there was not a design or qualification deficiency that resulted in a loss of operability or functionality, it did not create a loss of system safety function or of a single train for greater than the technical specification allowed outage time, it did not represent an actual loss of risk significant equipment, and it did not affect seismic, flooding, or severe weather initiating events.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

T. Barker, Manager, Quality Assurance
J. Bednar, Supervisor, Radiation Protection
D. Boes, Welding Engineer and Repair/Replacement Program
D. Buman, Director of Engineering
J. Chapman, Supervisor, Radiation Protection
S. Charbonnet, Nondestructive Examination Coordinator
J. Corey, Manager, Radiation Protection
L. Corey, Supervisor, Radiation Protection
L. Dewhirst, Corrective Actions and Assessment Manager
J. Flaherty, Licensing Manager
S. Freiling, Nuclear Instructor
G. Gardner, Supervisor, System Engineering
J. Horn, Supervisor, Design Engineering Mechanical
M. Joe, Training Supervisor
G. Levy, Senior Design Engineer
D. Madsen, Licensing Engineer
T. McClure, ISI/BWRVIP Engineer
E. McCutchen, Senior Licensing Engineer, Licensing
R. McDonald, Staff Health Physicist, Radiation Protection
R. Schultz, Quality Assurance Engineer
J. Smith, Maintenance Welding Coordinator
K. Tanner, Supervisor, Radiation Protection
D. VanDerKamp, Licensing Manager
D. Willis, General Manager of Plant Operations

NRC Personnel

M. Chambers, Resident Inspector
N. Greene, PhD., Health Physicist
J. Josey, Senior Resident Inspector
G. Pick, Senior Reactor Inspector
L. Ricketson, P.E., Senior Health Physicist
M. Young, Reactor Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000298-2011003-01	NCV	Failure to Assess Potential Adverse Effects on Internal Flooding Analysis (Section 1R06)
05000298-2011003-02	NCV	Failure to Follow Procedure Results in Inadequate Operability Determinations (Section 1R15)

Opened and Closed

05000298-2011003-03	NCV	Failure to Follow Procedure Results in Personnel Contaminations (Section 1R20.1)
05000298-2011003-04	NCV	Communication of an NRC Inspector's Presence by Station Personnel (Section 1R20.3)
05000298-2011003-05	NCV	Failure to Follow Radiation Work Permit Requirements (Section 2RSO1)
05000298-2011003-06	NCV	Failure to Correctly Translate Design Requirements into Installed Plant Configuration (Section 4OA2)
05000298-2011003-07	NCV	Failure to Adequately Assess and Manage Risk When Disabling A Hazard Barrier (Section 4OA3)
05000298-2011003-08	NCV	Failure to Follow Procedure Results in Degraded Emergency Diesel Generator (Section 4OA5.1)
05000298-2011003-09	NCV	Failure to Initiate Condition Reports for Nonconformances Identified During System Walk Downs (Section 4OA5.2)
05000298-2011003-10	NCV	Failure to Promptly Correct an Adverse Condition Related to Emergency Core Cooling System Venting (Section 4OA5.4)

Closed

05000298-2010004-00	LER	Loss of Safety Function for Emergency Diesel Generators (Section 4OA3)
05000298-2010005-05	URI	Diesel Generator Overspeed Governor Loose Bolting Issue (Section 4OA5.1)

LIST OF DOCUMENTS REVIEWED

Section 1RO4: Equipment Alignment

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
10-1841	Design Change Notice	
2040	Burns & Roe, P&ID SH1	N12
2044	Burns & Roe, Cooper Nuclear Station Flow Diagram–High Pressure Coolant Injection and Reactor Feed System	N70
2625-1	Jelco Isometric	N10

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2.2A.RHR.DIV1	Operations Procedure, Residual Heat Removal System Component Checklist (DIV 1)	5
2.2.33A	System Operating Procedure, High Pressure Coolant Injection System Component Checklist	24

CONDITION REPORTS

CR-CNS-2008-00247	CR-CNS-2008-06110	CR-CNS-2008-06533	CR-CNS-2008-06544
CR-CNS-2008-06651	CR-CNS-2008-06711	CR-CNS-2008-06715	CR-CNS-2008-06984
CR-CNS-2008-06997	CR-CNS-2011-05977		

Section 1RO5: Fire Protection

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
FHA Matrix, FA1– FZ1C	FHA FA Drawing	February 28, 2003
FHA Matrix, FA1– FZ1F	FHA FA Drawing	February 28, 2003

Section 1RO8: Inservice Inspection Activities

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Cooper Nuclear Station Vessel Internals Program	19.3
	Cooper Nuclear Station Fourth 10 Year Interval Inservice Inspection Programs	2.5
EE08-020	Review of GEH Report 0000-0084-9891 on JP-14 DF-1 Weld Indication	2
INR-CNS-11-003	Jet Pump 14, DF-1-JP14 Indication Report	March 23, 2011
UT-2011-008	RHC-BJ-2 Pipe to Elbow Ultrasonic Examination Report	April 7, 2011
1-CNS-N8B-1R	RPV Nozzle Inner Radius Ultrasonic Examination Report	April 7, 2011
PT-2011-001	Peripheral Control Rod Drive Housing to Flange Weld (CRD-50-27-1)	March 25, 2011
PT-2011-002	Peripheral Control Rod Drive Housing to Flange Weld (CRD-50-23-1)	March 29, 2011
10-065	CNS ASME Section XI Repair/Replacement Plan (RR-1 Form) for CRD-AOV-CV34	September 8, 2010

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
54-ISI-850	Manual Ultrasonic Examination of BWR Reactor Vessel Nozzle Inner Radius Regions and Nozzle to Shell Welds (inner 15%)	7
7.7.5.1	Welding Material Care, Storage, and Control Procedure CNS-WFMC	7
7.7.1	Special Process Control Maintenance Procedure	15
0.5	Conduct of the Condition Report Process	67
0.5.CR	Condition Report Initiation, Review, and Classification	17
0.29.3	Regulatory Interface	3
3.28.5	Administrative Controls for Non-Destructive Examination	1
54-ISI-363	Remote Underwater In-Vessel Visual Inspection of Reactor Pressure Vessel Internals, Components, and Associated Repairs in Boiling Water Reactors	6

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
54-ISI-30	Written Practice for the Qualification and Certification of NDE Personnel	14
QCP-9.1.0	Visual Examination–General Requirements	2
QCP-10-2-CNS-NUC2010117	Underwater Coating Repair–Torus	0
QCP-9.1.6-CNS-NUC2010117	Visual Examination of Class MC Metal Containment Components	0
QCP-12	Calibration of Inspection Instruments	11
TCM-3	Qualification and Certification of Nondestructive Examination Personnel	12
54-ISI-835	Ultrasonic Examination of Ferritic Piping Welds	13
54-ISI-240	Visible Solvent Removable Liquid Penetrant Examination Procedure	44
WP-2-CNS-NUC2010117	Underwater Desludging of Immersion Areas in Radiologically Contaminated Environments	0
0.30	ASME Section XI Repair/Replacement and Temporary Code and Non-Code Repair Procedure	26
7.7.10.4	P1-G Welding Procedure Specification	5
7.7.10.2	P1-B Welding Procedure Specification	4

CONDITION REPORTS

CR-CNS-2009-07668	CR-CNS-2009-07854	CR-CNS-2009-07905	CR-CNS-2009-08323
CR-CNS-2010-00083	CR-CNS-2010-00092	CR-CNS-2010-01551	CR-CNS-2010-01631
CR-CNS-2010-02922	CR-CNS-2010-04223	CR-CNS-2011-01034	CR-CNS-2011-03909
CR-CNS-2011-03289	CR-CNS-2011-04055	CR-CNS-2011-04061	CR-CNS-2011-04063

WORK ORDERS

4616363 4737787

Section 1R11: Licensed Operator Requalification Program

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SKL052-52-55	Lesson Title: OPS REC Pump Trip, Loss of FW Heating, Drywell Leak, RPS Failure, ARI inserts Control Rods, Containment Spray Failure, Emergency Depressurization	7

Section 1R12: Maintenance Effectiveness

CONDITION REPORTS

CR-CNS-2009-00780	CR-CNS-2009-00937	CR-CNS-2011-04589	CR-CNS-2011-04643
CR-CNS-2011-04694	CR-CNS-2011-05230	CR-CNS-2011-05289	CR-CNS-2011-05329
CR-CNS-2011-05358	CR-CNS-2011-05472	CR-CNS-2011-05502	CR-CNS-2011-06643

NOTIFICATIONS

10807154 10808023 1084367

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

CONDITION REPORTS

CR-CNS-2011-05156

WORK ORDERS

4778153 4824079

Section 1R15: Operability Evaluations

CONDITION REPORTS

CR-CNS-2008-06984	CR-CNS-2008-06985	CR-CNS-2009-00780	CR-CNS-2009-00937
CR-CNS-2011-03967	CR-CNS-2011-04565	CR-CNS-2011-04589	CR-CNS-2011-04643
CR-CNS-2011-04694	CR-CNS-2011-05230	CR-CNS-2011-05289	

Section 1R18: Plant Modifications

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>
10328269	Engineering Report

Section 1R19: Postmaintenance Testing

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2040	Isometric Key for Residual Heat Removal System Loop "B", Sh2	N12

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
6.2DG.102	Surveillance Procedure, Diesel Generator Demonstration of Operability Test (Div 2), performed 4/6/11	44

CONDITION REPORTS

CR-CNS-2011-03762 CR-CNS-2011-03850 CR-CNS-2011-05975 CR-CNS-2011-05977

NOTIFICATION

10804367

WORK ORDERS

4740703 4821101

Section 1R20: Refueling and Other Outage Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
9.RADOP.1	Radiation Protection at CNS	9
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>
2011-073	Rx Building Activities in High Rad Areas
2011-078	RP Activities in SWP Areas

CONDITION REPORTS

CR-CNS-2011-3311

Section 1R22: Surveillance Testing

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
6.1DG.102	Surveillance Procedure, Diesel Generator Demonstration of Operability Test (DIV 1)	47
6.1DG.302	Surveillance Procedure, Undervoltage Logic Functional Load Shedding, and Sequential Loading Test (DIV 1)	60 and 61

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

AIRBORNE RADIOACTIVITY SURVEYS

<u>NUMBER</u>	<u>DATE</u>
Turbine Building-932	March 21, 2011/9:57 p.m.
Turbine Building-932	March 22, 2011/12:53 a.m.
Turbine Building-932	March 22, 2011/11:55 p.m.

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
QA Audit 10-03	Radiological Material Processing & Shipping, Radiological Protection, and Independent Spent Fuel Storage Installation	August 9, 2010

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
9.EN-RP-151	Radiological Diving	0
9.RADOP.1	Radiation Protection at CNS	9

RADIATION SURVEY RECORDS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
CNS-1102-0150	Reactor Building-931'	February 28, 2011
CNS-1103-0037	Augmented Radwaste Building-903'	March 7, 2011
CNS -1103-0069	Reactor Building-958'	March 13, 2011
CNS-1103-0125	Reactor Building-931'	March 15, 2011
CNS-1103-0134	Reactor Building-1001'	March 16, 2011
CNS-1103-0290	Reactor Building-903'	March 23, 2011
CNS-1103-0303	Reactor Building-903'-Northeast Corner	March 24, 2011
CNS-1103-0305	Reactor Building-903	March 24, 2011
CNS-1103-0307	Reactor Building-903'-Southeast Corner	March 24, 2011

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
2011-005	General Access/Management Observations
2011-405	Remove/Replace CRD's Undervessel
2011-408	LLRT in the Drywell

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
2011-413	Inservice Inspection and Erosion Corrosion in the Drywell and Steam Tunnel

CONDITION REPORTS

CR-CNS-2010-2496	CR-CNS-2010-2865	CR-CNS-2010-3624	CR-CNS-2010-4390
CR-CNS-2010-4861	CR-CNS-2010-9494	CR-CNS-2011-0644	CR-CNS-2011-0800
CR-CNS-2011-1318	CR-CNS-2011-1485		

Section 2RS02: Occupational ALARA Planning and Controls

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
QAD20100026	Quality Assurance Audit Report (10-03): Radiological Material Processing and Shipping, Radiological Protection, and Independent Spent Fuel Storage Installation	August 9, 2010

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>DATE</u>
CNS Collective Radiation Exposure Reduction Plan (2010-2014)	February 23, 2011
RE-26 Daily Dose Report	March 22-25, 2011

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0.ALARA.1	CNS ALARA Program	5
9.ALARA.1	Personnel Dosimetry and Occupational Radiation Exposure Program	39
9.ALARA.4	Radiation Work Permits	14
9.ALARA.5	ALARA Planning and Controls	21
9.EN-RP-110	ALARA Program	4
9.EN-RP-141	Job Coverage	8
9.EN-RP-203	Dose Assessment	2

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
9.RADOP.1	Radiation Protection at CNS	10

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>
2011-0412	IVVI and ISI on the Refuel Floor during RE 26
2011-0413	In-service Inspection and Erosion Corrosion in the Drywell and Steam Tunnel
2011-0414	ISI and EC Activities in the RCA
2011-0415	ISI and EC Activities in SWP Areas during RE 26
2011-0435	Reactor Disassemble/Re-Assemble
2011-0436	Reactor Cell Maintenance / Fuel Moves
2011-0437	LPRM Replacement
2011-0438	Refuel Floor Support Activities
2011-0455	RE 26 Chemical Decon Non-SWP Areas
2011-0456	RE 26 Chemical Decon Reactor Building SWP Areas
2011-0457	RE 26 Chemical Decon Drywell Activities
2011-0458	RE 26 Chemical Decon Resin Processing and Filter Changeout

CONDITION REPORTS

CR-CNS-2010-02455	CR-CNS-2010-04398	CNS-2010-04399	CNS-2010-04496
CR-CNS-2010-07309	CR-CNS-2010-08769	CNS-2011-01054	CNS-2011-01164
CR-CNS-2011-01410	CR-CNS-2011-01485	CNS-2011-01722	

Section 2RS03: In-Plant Airborne Radioactivity Control and Mitigation

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
CNS RP-411	Air Quality Data Sheet: Plant Service Air (Reactor Building: Oxygen ITX #33)	July 10, 2010
CNS RP-415	Air Quality Data Sheet: Breathing Air Compressor (Bauer CFS II)	March 9, 2011

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	SCBA Functional Tests	March 4, 2010, through February 7, 2011
GEN0020201Q	Respiratory Physical Qualifications	Various Dates in 2010 and 2011
GEN0020101Q	Respiratory Protection Training Records	Various Dates in 2010 and 2011
GEN0020401Q	Respirator Fit Test–Scott Records	Various Dates in 2010 and 2011
SKL0180104Q	Training for SCBA records	Various Dates from 1999 thru 2011

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
9.RESP.1	Respiratory Protection at CNS	14
9.RESP.2	Self-Contained Breathing Apparatus	21
9.RESP.5	Plant Service Air Quality Checks	2
2.2.60	Primary Containment Ventilation and Nitrogen Inerting System	83

CONDITION REPORTS

CR-CNS-2010-02796	CR-CNS-2010-03483	CR-CNS-2010-03502	CR-CNS-2010-06750
CR-CNS-2010-07041	CR-CNS-2010-08718	CR-CNS-2011-01419	

Section 4OA5: Other Activities

4OA5.1 Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)"

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FAI/08-70	Gas-Voids Pressure Pulsations Program	1
GEH 0000-0086-7825	Potential Effects of Gas Accumulation on ECCS Analysis as Part of Generic Letter 2008-01 Resolution	0
GEH 0000-0087-5676	ECCS Pumps Suction Void Fraction Study	0
GEH 0000-0088-8669	Effects of Voiding in ECCS Drywell Injection Piping	0
NAI-1445-001	Evaluation of Gas Accumulation in Cooper ECCS Suction Piping	0
NAI-1445-002	Evaluation of Gas Accumulation in Cooper ECCS Discharge Piping	1

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Core Spray, High Pressure Coolant Injection, and Residual Heat Removal Hydraulic Profiles	
117C3324	Rack 25-59	5
2040, Sh 1	Isometric Key--Residual Heat Removal System	N14
2040, Sh 2	Isometric Key--Residual Heat Removal System Loop B	N13
2041	Isometric Key--Reactor Building Main Steam	N23
2044	Isometric Key--High Pressure Coolant Injection and Reactor Feed Systems	N19
2045, Sh 1	Isometric Key--Core Spray & Standby Liquid Control Systems	N11
2049, Sh 3	Isometric Key--Condensate Supply System	N04
EE 08-002	Incorporation of ECST Vortex Testing into CNS Design Basis	0
EE 08-045	BWROG Gas Accumulation Industry Guidance Methodology and Acceptance Criteria	0

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Information Notice 2010-11	Potential for Steam Voiding Causing Residual Heat Removal System Inoperability	June 16,2010
NEI 09-10	Guidelines for Effective Prevention and Management of System Gas Accumulation	0 & 1
NLS2010008	Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	February 2, 2010
NLS2009094	Response to Request for Additional Information Regarding Nebraska Public Power District's Nine-Month Response to Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	December 17, 2009
NLS2009035	Revision to Commitment Made in Nine-Month Response to NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	May 7, 2009
NLS2008081	Nine-Month Response to NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	October 10, 2008
NLS2008074	Request for Extension to Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	September 9, 2008

LESSON PLANS

TITLE
CNS Engineering Training--How Engineering Can Manage Gas Accumulation

LETTERS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
ML100760396	Correction to Closeout of Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	March 17, 2010

LETTERS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
ML082740251	Cooper Nuclear Station–Re: Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, Proposed Alternative Course of Action	October 3, 2008

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Final Safety Analysis Report Question 6.12	
	Specification E-69-4, Section G, Mechanical Piping, Equipment, and Erection	
	Technical Specifications Table T3.3.2-1, ECCS and RCIC Instrumentation	
2009-017	Updated Safety Analysis Report revision to reflect installation of testable flanges instead of relief valves	November 23, 2009
CNSLO-2008-00139	Tracking condition report for Generic Letter 2008-01 corrective actions	

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2.1.11.2	Reactor Building Data	41
2.2A.RHR.DIV2	Residual Heat Removal System Component Checklist (DIV 2)	6
2.2.9	Core Spray System	72
2.2.33	High Pressure Coolant Injection System	69
2.2.69	Residual Heat Removal System	89
2.2.69.2	RHR System Shutdown Operations	78
3.28.5.2	Gas Voids Checks Using Ultrasonic Techniques and Equipment	3
6.1CS.101	Core Spray Test Mode Surveillance Operation (IST)(DIV 1)	21
6.2CS.101	Core Spray Test Mode Surveillance Operation (IST)(DIV 2)	21
6.1CSCS.305	CSCS Discharge Piping Full Low Pressure Alarm Calibration and Functional Test	8

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
6.1MISC.503	31 Day Venting of ECCS And RCIC Injection/Spray Subsystem Piping (DIV 1)	0
6.2MISC.503	31 Day Venting of ECCS Injection/Spray Subsystem Piping (DIV 2)	0
6.1RHR.101	RHR Test Mode Surveillance Operation (IST)(DIV 1)	24
14.0.10	Instrument System Valve Configuration Management	5
EDP-06	Supporting Requirements for Configuration Change Control	41
EN-DC-219	Gas Accumulation Management	0

CONDITION REPORTS

CR-CNS-2005-02565	CR-CNS-2008-06533	CR-CNS-2008-06537	CR-CNS-2008-06544
CR-CNS-2008-06581	CR-CNS-2008-06582	CR-CNS-2008-06651	CR-CNS-2008-06711
CR-CNS-2008-06715	CR-CNS-2008-06842	CR-CNS-2008-06843	CR-CNS-2008-06844
CR-CNS-2008-06848	CR-CNS-2008-06849	CR-CNS-2008-06984	CR-CNS-2008-06985
CR-CNS-2008-06992	CR-CNS-2008-06993	CR-CNS-2008-06997	CR-CNS-2008-06998
CR-CNS-2008-07030	CR-CNS-2008-07032	CR-CNS-2008-07033	CR-CNS-2008-07034
CR-CNS-2008-07035	CR-CNS-2008-07048	CR-CNS-2009-05258	CR-CNS-2009-05527
CR-CNS-2010-04517	CR-CNS-2011-05525	CR-CNS-2011-05656	CR-CNS-2011-05975
CR-CNS-2011-05977	CR-CNS-2011-05979	CR-CNS-2011-06017	

SURVEILLANCE TESTS

4717084	4717085	4717086	4717087	4717088
4717089	4717090	4717091	4717092	4717093
4717094	4717095	4717096	4717097	4717098
4717099	4720800	4735779		