



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
1600 EAST LAMAR BLVD  
ARLINGTON, TEXAS 76011-4511

February 14, 2013

Mr. Oscar A. Limpias, 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  
05000298/2012005

Dear Mr. Limpias:

On December 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed inspection report documents the inspection results which were discussed on January 03, 2013, with Mr. K. Higginbotham, General Manager of Plant Operations, 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.

Five NRC identified and four self-revealing findings of very low safety significance (Green) were identified during this inspection.

All of these findings were determined to involve violations of NRC requirements. Additionally, licensee-identified violations which were determined to be of very low safety significance are listed in this report. The NRC is treating these violations as non-cited violations (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Cooper Nuclear Station.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC Resident Inspector at Cooper Nuclear Station.

O. Limpias

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

Sincerely,

**/RA/**

David Proulx, Chief (Acting)  
Project Branch C  
Division of Reactor Projects

Docket Nos.: 50-298  
License Nos: DRP-46

Enclosure: Inspection Report 05000298/2012005  
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000298

License: DRP-46

Report: 05000298/2012005

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: 72676 648A Ave  
Brownville, NE 68321

Dates: September 27, 2012 through December 31, 2012

Inspectors: J. Josey, Senior Resident Inspector  
C. Henderson, Resident Inspector  
S. Garchow, Senior Operations Engineer  
T. Buchanan, Operations Engineer  
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J. Laughlin, Emergency Preparedness Inspector, NSIR  
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N. Greene, Ph.D., Health Physicist  
J. O'Donnell, Health Physicist

Approved By: David Proulx, Chief (Acting)  
Project Branch C  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000298/2012005; 09/27/2012 – 12/31/2012; COOPER NUCLEAR STATION, Integrated Resident and Regional Report; Adverse Weather Protection , Maintenance Effectiveness, Operability Evaluations and Functionality Assessments, Refueling and Other Outage Activities, Radiological Hazard Assessment and Exposure Controls, and Other Activities.

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

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

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, associated with the inadequate Maintenance Procedures 7.2.15, "Service Water Pump Column Maintenance and Bowl Assembly Replacement," Revision 35, Maintenance Procedure 7.2.16, "Backup Fire Pump Maintenance", Revision 14, and Maintenance Procedure 7.2.30, "Service Water Strainer Maintenance," Revision 19. Specifically, those procedures did not address the number of required temporary heaters and required power sources during a loss of offsite power during design basis cold weather temperature of -5 degrees Fahrenheit with service water pump room hatches removed or doors open during maintenance. The issue was entered into their corrective action program for resolution as Condition Reports CR-CNS-2012-07891, CR-CNS-2012-08184, and CR-CNS-2012-08371.

The licensee's inadequate procedural direction to establish temporary heating in the service water pump during cold weather condition with the hatches removed or doors open, was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding, because it was associated with the procedural quality attribute of the Mitigating Systems Cornerstone, in that the inadequate procedures did not identify the number of temporary heaters and their power supplies that would be necessary to maintain the service water system operable/functional during a loss of offsite power coincident with the licensing basis cold weather conditions, and thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual

Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because the finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of the diesel generator capable of supplying one division of the onsite safety related power distribution subsystems, as defined in Appendix G. The finding was determined to have a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program, in that the licensee failed to thoroughly evaluate an independent heating system. [P.1(c)]. (Section 1R01)

- Green. The inspectors identified a non-cited violation of 10 CFR 50.65(a)(2), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants." Specifically, the licensee failed to appropriately consider the availability of the reactor building, diesel generator building, and control building roof drains when evaluating whether their performance or condition had been demonstrated to be effectively controlled. The licensee entered this issue in their corrective action program as Condition Report CR-CNS-2012-05993.

The licensee's failure to effectively monitor the performance of maintenance rule scoped equipment in accordance with 10 CFR 50.65(a)(2) was a performance deficiency. The performance deficiency was determined to be more than minor, and is therefore a finding, because it is associated with the protection against the external factors attribute of the Mitigating Systems Cornerstone, in that the failure to appropriately evaluate availability of the roof drains could result in their not being able to perform their intended function when required, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process For Findings At-Power," the finding was determined to have very low safety significance (Green) because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a flooding event. The inspectors determined that the apparent cause of this finding was that the licensee had performed an inadequate evaluation with regard to Condition Report CR-CNS-2011-01859 and failed to recognize and correct the lack of appropriate monitoring criteria for the roof drains. Therefore, the finding has a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component because the licensee failed to thoroughly evaluate problems such that the resolutions address causes [P.1(c)]. (Section 1R12)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to follow the requirements of Station Procedure 0.27.1, "Periodic Structural Inspections of Structures," Revision 7. Specifically, the licensee failed to identify and remove foreign material from the diesel generator

building roof which could have interfered with the ability of the roof drains and scuppers to remove water during a flooding event. The issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2012-08833.

The failure to follow the requirements of a station procedure was a performance deficiency. The performance deficiency was determined to be more than minor, and is therefore a finding, because it is associated with the protection against the external factors attribute of the Mitigating Systems Cornerstone, in that the failure to recognize and remove foreign material from the diesel generator roof could have resulted in the roof drains and scuppers not being able to perform their intended function when required, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process For Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than its technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The inspectors determined that the apparent cause of this finding was that the licensee had failed to use conservative assumption, when determining what constituted foreign material on the diesel generator roof. Therefore, the finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe in order to disapprove the action [H.1(b)]. (Section 1R12)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to follow the requirements of Station Procedure 0.5OPS, "Operations Review of Condition Reports/Operability Determination," Revision 38, and properly document the basis for operability when a degraded or nonconforming condition is identified. Specifically, the inspectors identified that the licensee had failed to consider all relevant information when assessing operability of diesel generator 2, supported by service water system Division II, with service water system Division I hatches removed for Zurn strainer A replacement during design basis cold weather temperature of -5 degrees Fahrenheit with a loss of off-site power. The licensee

entered these issues into their corrective action program for resolution as Condition Reports CR-CNS-2012-08148 and CR-CNS-2012-08292.

The licensee's failure to consider all relevant information and appropriately assess operability when a nonconforming condition was identified was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, in that the inadequate operability determination failed to identify the number of temporary heaters and their power supplies that would be necessary to maintain Division II of the service water system functional to support operability of diesel generator 2, during a loss of offsite power coincident with the licensing basis cold weather conditions, and thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because the finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of the diesel generator capable of supplying one division of the onsite safety related power distribution subsystems, as defined in Appendix G. The inspectors determined that the apparent cause of this finding was that operators had failed to verify their assumptions associated with the compensatory measures to maintain service water system Division II function and support operability of diesel generator 2. Therefore, the finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe in order to disapprove the action [H.1(b)]. (Section 1R15)

- Green. The inspectors documented a self-revealing, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to correctly translate certain parts of the design bases into installed plant equipment. Specifically, the licensee failed to ensure that unused flushing ports on the service water booster pump casing were either welded, or not installed, during procurement. This failure resulted in the licensee installing a new service water booster pump with unused flushing ports that were not welded during installation of service water booster pump D, which resulted in degradation of the pump's casing and the pump not being able to perform its specified safety function. The licensee entered this deficiency into their corrective action program for resolution as Condition Reports CR-CNS-2012-07365 and CR-CNS-2012-07378.

The failure to maintain design control of the service water booster pumps was a performance deficiency. This performance deficiency was determined to be

more than minor, and is therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone, in that the licensee installed a service water booster pump with an unused flushing port not welded, which resulted in degradation of the pumps casing and the pump not being able to perform its specified safety function, and thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because the finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of shutdown cooling, as defined in Appendix G. The finding was determined to have a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component because the licensee failed to thoroughly evaluate concerns with whether or not the unused flushing ports on service water booster pump D should be welded. [P.1(c)]. (Section 1R20)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," associated with the licensee's failure to follow the requirements of Station Procedure 0.5CR, "Condition Report Initiation, Review, and Classification," Revision 19, and enter conditions adverse to quality in the station's corrective action program. Specifically, station personnel performing walkdowns for Temporary Instruction 2515/187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns," failed to initiate condition reports for degraded or nonconforming conditions as they were identified. The licensee entered this issue into their corrective action program for resolution as Condition Report CR-CNS-2012-06753.

The failure to follow the requirements of Station Procedure 0.5CR and initiate condition reports when degraded nonconforming conditions were identified was a performance deficiency. The performance deficiency was determined to be more than minor, and is therefore a finding, because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone, in that the failure to write condition reports when degraded conditions were identified resulted in equipment being in an unevaluated state and its ability to perform its function being unknown, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process For Findings At-Power," the finding was determined to have very low safety significance (Green) because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a flooding event. The inspectors determined that the apparent cause of this finding was that licensee personnel failed to make safety/risk-significant decisions using a systematic

process when degraded conditions were identified during in plant walkdowns. Therefore, the finding has a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to make safety/risk-significant decisions using a systematic process when faced with uncertain plant conditions [H.1(a)]. (Section 40A5).

#### Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealing, non-cited violation of 10 CFR 20.1501(a), "Standards for Protection against Radiation," Subpart F, "Surveys and Monitoring," associated with the licensee's failure to perform an adequate radiation survey to determine and evaluate radiological hazards workers could be exposed to during a planned work activity. The licensee entered this issue into the station's corrective action program as Condition Report CR-CNS-2012-09336.

The failure to perform an adequate radiation survey was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding, because it was associated with the program and process attribute (exposure control) of the Occupational Radiation Safety cornerstone, in that workers were allowed to enter an area of unknown radiation dose rates and received an unintended and unexpected radiation exposure, thereby affecting the associated cornerstone objective to ensure the adequate protection of the worker's health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning; (2) it did not involve an overexposure; (3) there was no substantial potential for an overexposure; and (4) the licensee's ability to assess dose was not compromised. The inspectors determined that the apparent cause of this finding was that radiation protection personnel at the control point failed to verify their assumptions associated with current survey data prior to allowing workers into a locked high radiation area. Therefore, this finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe in order to disapprove the action [H.1(b)]. (Section 1R20)

- Green. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.4.1.a, which resulted from a worker failing to follow radiation protection procedures. In response, the licensee investigated the occurrence, coached the individual on human performance, and entered the issue into the corrective action program as Condition Report CR-CNS-2011-04915.

The failure to follow radiation protection procedures was a performance deficiency. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective in that working outside the scope of procedures by accessing the higher dose rates behind the installed shielding had the potential to increase personnel dose. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding had very low safety significance because: (1) it was not an as low as is reasonably achievable finding; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. This finding had a cross-cutting aspect in the human performance area, work practices component, in that the licensee failed to provide adequate management oversight of work activities such that nuclear safety was maintained [H.4(c)]. (Section 2RS01)

- Green. The inspectors reviewed a self-revealing, non-cited violation of 10 CFR 20.1501(a) for the licensee's failure to perform an adequate radiological survey. In response, the licensee immediately restricted access to the torus area, performed a follow-up survey, and entered the issue into the corrective action program as Condition Report CR-CNS-2012-07577.

The failure to perform an adequate radiological survey is a performance deficiency. The performance deficiency 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 the inadequate survey did not ensure exposure control for radiation workers. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding had very low safety significance because: (1) it was not an as low as is reasonably achievable finding; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. This finding had a cross-cutting aspect in the human performance area, work control component, because the licensee failed to incorporate job site conditions that impacted radiological safety [H.3(a)]. (Section 2RS01)

## **B. Licensee-Identified Violations**

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

## REPORT DETAILS

### Summary of Plant Status

Cooper Nuclear Station began the inspection period with plant power coasting down, and on October 13, 2012, the licensee shut the plant down for Refueling Outage 27. They returned the plant to full power on December 7, 2012. On December 10, 2012, they lowered plant power to approximately 15 percent to enable repairs to main condenser u-tubes. On December 13, 2012, they increased power to 100 percent, where it remained for the rest of the reporting period.

### 1. REACTOR SAFETY

#### Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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

##### Readiness for Seasonal Extreme Weather Conditions

##### a. Inspection Scope

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

During the inspection, the inspectors focused on plant-specific design features and the 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 plant personnel were 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:

- November 30, 2012, Service water system

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

b. Findings

Introduction. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, associated with the inadequate Maintenance Procedure 7.2.15, "Service Water Pump Column Maintenance and Bowl Assembly Replacement," Revision 35, Maintenance Procedure 7.2.16, "Backup Fire Pump Maintenance," Revision 14, and Maintenance Procedure 7.2.30, "Service Water Strainer Maintenance," Revision 19.

Description. On October 23, 2012, the inspectors identified that the licensee had removed the service water pump room hatches for service water system Division I to support replacement of the service water Zurn strainer A. Because Division I and II service water pumps are contained in the same room in the intake structure, the inspectors questioned the potential effect of this configuration on Division II of the service water system, which was supporting operability of diesel generator 2. The inspectors noted that the design-basis cold weather temperature was -5 degrees Fahrenheit, and questioned how the station maintained the service water pump room temperature with the hatches removed during design-basis cold weather. The inspectors reviewed station design calculation NEDC 91-232, "Service Water Pump Room Loss of Heating," Revision 4, and found no evaluation of room temperature with hatches removed during design-basis cold weather. The licensee initiated Condition Report CR-CNS-2012-07891 to capture this issue in the station's corrective action program.

During their review for Condition Report CR-CNS-2012-07891, the licensee determined that they had initiated design calculation NEDC 91-232 to evaluate the steady-state room temperature of the service water pump room during the design-basis cold weather, with the hatches installed, room doors closed, the nonessential heating system not in operation, and one service water pump in operation. The licensee asserted that with the hatches removed, they were maintaining operability of Division II of the service water system by installing a compensatory independent heating system (i.e. salamander heaters) into the room, in accordance with Maintenance Procedure 7.2.30, "Service Water Strainer Maintenance," Revision 19.

The inspectors reviewed Maintenance Procedure 7.2.30 and Condition Report CR-CNS-2009-10389 regarding the heat addition into the service water pump room from operating service water pumps. The inspectors also reviewed Engineering Evaluation 10-009, "Service Water, Intake Structure, Heating and Ventilation," Revision 0, which was incorporated into design calculation NEDC 91-232. The inspectors noted that Maintenance Procedure 7.2.30 and Engineering Evaluation 10-009 did not specify the number of heaters required and where they would be powered from, in the event of loss of off-site power during cold weather with the hatches removed. The licensee initiated Condition Reports CR-CNS-2012-08148 and CR-CNS-2012-08371 to address this concern.

The licensee conducted evaluations and extent-of-condition reviews for Condition Reports CR-CNS-2012-08148 and CR-CNS-2012-08371, and determined that

Maintenance Procedure 7.2.30, Maintenance Procedure 7.2.15, "Service Water Pump Column Maintenance and Bowl Assembly Replacement," Revision 35, and Maintenance Procedure 7.2.16, "Backup Fire Pump Maintenance," Revision 14, did not ensure that adequate heating or power supplies were available during a loss of off-site power when using an independent heating system with the service water pump hatches removed or with the doors open during design-basis cold weather. Consequently, the licensee initiated Engineering Change Request 12-037, "Service Water Support of Operability with the Service Water Pump Room Door Open and/or Ceiling Plugs Removed during Cold Weather Conditions," to determine how much additional heat and power supplies for the independent heating system, in addition to the one operating service water pump, to maintain the service water pump room temperature at or above 32 degrees Fahrenheit during design-basis cold weather with a loss of off-site power. Dispositioning that Engineering Change Request included developing compensatory measures to maintain service water system operable during design-basis cold weather with a loss of the nonessential heating system in the service water pump room. Subsequently, the licensee incorporated those compensatory measures into Maintenance Procedures 7.2.30, 7.2.15, and 7.2.16.

Analysis. The licensee's failure to provide adequate instructions to maintain temperatures in the service water pump room during design-basis cold weather conditions with the hatches removed or doors open was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding, because it was associated with the procedural quality attribute of the Mitigating Systems Cornerstone, in that the inadequate procedures did not identify the number of temporary heaters and their power supplies that would be necessary to maintain the service water system operable/functional during a loss of offsite power coincident with the licensing basis cold weather conditions, and thereby affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because it did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of the diesel generator capable of supplying one division of the onsite safety related power distribution subsystems, as defined in Appendix G. The inspectors determined that the apparent cause of this finding was that when the licensee evaluated Condition Report CR-CNS-2009-10389 and added compensatory measures to maintain service water pump room temperature, they did not address measures that would be necessary with the service water pump room hatches removed or with the doors open with a loss of off-site power during design-basis cold weather temperatures. Because this cause corresponds to not thoroughly evaluating problems such that the resolutions address causes and extents of condition, this finding has a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program component [P.1(c)].

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," of February 1978. Section 9(a) of Regulatory Guide 1.33 recommends that maintenance that can affect performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, maintenance that could affect the performance of safety-related equipment was performed in accordance with written procedures that were not appropriate to the circumstances. Specifically, from June 28, 2010 to November 05, 2012, written procedures for conducting maintenance in the service water pump room which affected safety-related equipment did not adequately address the number of temporary heaters and their power supplies that would be necessary to maintain the service water system operable/functional with a service water pump room hatch removed and/or doors open during a loss of offsite power coincident with the licensing basis cold weather conditions. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition Reports CR-CNS-2012-07891, CR-CNS-2012-08184, and CR-CNS-2012-08371 to address recurrence. (NCV 05000298/2012005-01, "Inadequate Maintenance Procedures for the Service Water Pump Room.")

#### **1R04 Equipment Alignment (71111.04)**

##### Partial Walkdown

##### a. Inspection Scope

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

- November 2, 2012, Alternate decay heat removal
- November 30, 2012, Appendix R valve modifications
- November 30, 2012, Shut down cooling – residual heat removal
- December 31, 2012, Service water booster pump room ventilation

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, the 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 four partial system walkdown samples 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:

- October 18, 2012, Steam tunnel, Fire Area VIII, Zone 2E
- November 22, 2012, Service water pump room; Div II hotwork, Zone 20A
- November 24, 2012, Drywell
- November 27, 2012, Fire impairment for reactor building 903 feet and 1001 feet, Fire Area I, Zone 2A, 2C, and 6

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.

**1R07 Heat Sink Performance (71111.07)**

a. Inspection Scope

The inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for the residual heat removal exchanger B. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method outlined in EPRI Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines"; the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one heat sink inspection sample as defined in Inspection Procedure 71111.07-05.

b. Findings

No findings were identified.

## 1R08 Inservice Inspection Activities (71111.08)

Completion of Sections .1 and .2, below, constitutes completion of one sample as defined in Inspection Procedure 71111.08-05.

### .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 five nondestructive examination activities and reviewed five nondestructive examination activities that included five types of examinations. There were no examinations with relevant indications accepted by licensee personnel for continued service or the licensee did not identify any relevant indications accepted for continued service during the nondestructive examinations.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Service Water	SW-DB-46	Visual
Residual Heat Removal	RHR-RH-H6	Visual
Residual Heat Removal	RHR-CV-14C	Radiograph
Main Steam	MS-HA1	Visual
Main Steam	MS-HA2	Magnetic Particle

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Main Steam	MSS-6	Visual
Residual Heat Removal	RHR-CA-5A	Ultrasonic
Residual Heat Removal	RHR-PA-A1	Dye Penetrant
Residual Heat Removal	RHB-CE1-2	Magnetic Particle
Reactor Vessel	RVI-BJ-16B1	Ultrasonic

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 also verified the qualifications of all nondestructive examination technicians performing the inspections were current.

The inspectors observed two welds on the service water and residual heat removal systems. No weld on the reactor coolant system pressure boundary were observed.

The inspectors directly observed a portion of the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Service Water	FW-46	Shielded Metal Arc
Residual Heat Removal	RHR-CV-14CV	Shielded Metal Arc

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 12 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 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 and Licensed Operator Performance (71111.11)

### .1 Quarterly Review of Licensed Operator Requalification Program

#### a. Inspection Scope

On December 21, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations and the quality of the training provided
- The modeling and performance of the control room simulator
- The quality of post-scenario critiques
- Follow-up actions taken by the licensee for identified discrepancies

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.

### .2 Quarterly Observation of Licensed Operator Performance

#### a. Inspection Scope

On October 13, 2012, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to shutdown for Refueling Outage 27.

In addition, the inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedure and other operations department policies.

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

#### b. Findings

No findings were identified.

### .3 Biennial Inspection

#### a. Inspection Scope

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed the operating tests, reviewed randomly selected medical and watchstanding proficiency records, and observed ongoing operating test activities.

The on-site inspection effort occurred from August 13, 2012 to August 16, 2012. During this time, the inspectors interviewed licensee personnel to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also performed observations of portions of the operating tests. These observations included fifteen job performance measures and five scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content. The inspectors also reviewed overall operator performance on the biennial written exams as well as the annual operating tests.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of the Operations Training Review Group and Training Advisory Committee meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. The inspector also reviewed a sample of licensed operator annual medical forms and procedures governing the medical examination process for conformance to 10 CFR 55.53, a sampling of the licensed requalification program feedback system, and reviewed remediation process records.

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity, and simulator deficiencies.

From October 1 to October 5, 2012, the inspectors reviewed the biennial written examinations and reviewed the overall pass/fail results of the individual job performance measure operating tests, simulator operating tests, and written examinations administered by the licensee during the operator licensing requalification cycles and biennial examination. Final examination results were assessed to determine if they were consistent with the guidance contained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process." Eight separate crews participated in simulator operating tests, written examinations, and job performance measure operating tests, totaling 44 licensed operators. There were two failures on the written examination, three individual failures on the simulator operating tests, and no overall failures on the job

performance measure operating tests. All of the failures were successfully remediated with the exception of one individual that was permanently removed from licensed duties.

The inspectors completed one inspection sample of the biennial licensed operator requalification program.

b. Findings

No findings of significance were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

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

- December 31, 2012, Diesel generator jacket water heater, voltage and frequency droop isoch switches
- December 31, 2012, Diesel generator building

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

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

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

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

b. Findings

(1) Failure to Adequately Monitor the Performance of Roof Drains

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50.65(a)(2), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants."

Description. The roof drains for the reactor building, control building, and diesel generator building were scoped into the site's maintenance rule program because in analysis Work Order 2502-02, "Roof Drainage," they were credited for rain water removal at a calculated rate to protect the safety related structures during a design-basis precipitation event. Within the maintenance rule program, the subject drains were scoped under the structural monitoring program. In conjunction with scuppers, the drains were required to remove water at specified rates to protect the structures.

While reviewing the licensee's maintenance rule scoping, classification, and performance evaluation of the roof drains, the inspectors identified that the licensee was failing to appropriately consider the availability of the subject roof drains when evaluating whether their performance or condition had been demonstrated to be effectively controlled. The inspectors noted that the licensee was evaluating identified deficiencies to determine if they would fail the associated structure, and not to determine if they would impact the availability of the roof drains.

Inspectors determined that by doing this the licensee was not appropriately monitoring the roof drains to ensure that their performance or condition had been demonstrated to be effectively controlled. The inspectors informed the licensee of their concerns and the licensee initiated Condition Report CR-CNS-2012-05993 to capture this issue in the station's corrective action program. The licensee recognized the inadequate monitoring and moved the equipment to 10 CFR 50.65(a)(1) monitoring requirements pending further review.

Inspectors noted that Condition Report CR-CNS-2011-01859, "MNT Rule Performance Criteria," had been initiated because of issues identified with some of the station's performance criteria. Under this condition report the licensee was to review all performance criteria for adequacy, and propose changes if necessary. The inspectors determined that the licensee's review was inadequate with regard to the roof drains and

the licensee failed to recognize and correct the lack of appropriate monitoring criteria for the roof drains and this was the cause of this issue.

Analysis. The licensee's failure to effectively monitor the performance of maintenance rule scoped equipment in accordance with 10 CFR 50.65(a)(2) was a performance deficiency. The performance deficiency was determined to be more than minor, and is therefore a finding, because it is associated with the protection against the external factors attribute of the Mitigating Systems Cornerstone, in that the failure to appropriately evaluate availability of the roof drains could result in their not being able to perform their intended function when required, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process For Findings At-Power," the finding was determined to have very low safety significance (Green) because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a flooding event. This finding had a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component because the licensee failed to thoroughly evaluate problems such that the resolutions address causes [P.1(c)].

Enforcement. Title 10 CFR 50.65(a)(1) requires, in part, that holders of an operating license shall monitor the performance of systems and components against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components are capable of fulfilling their intended safety functions. 10 CFR 50.65(a)(2) states, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance of a system is being effectively controlled through the performance of appropriate preventive maintenance, such that the system remains capable of performing its intended function.

Contrary to the above, from initial maintenance rule scoping in 1996 to January 2013, the licensee did not monitor the performance of systems and components against licensee-established goals in a manner sufficient to provide reasonable assurance that certain structures were capable of fulfilling their intended safety functions, and the licensee did not demonstrate that the performance of a system was being effectively controlled through the performance of appropriate preventive maintenance, such that the system remained capable of performing its intended function. Specifically, the licensee did not monitor the performance of the roof drains associated with the reactor building, diesel generator building, and control building against licensee-established goals, and the licensee did not demonstrate that the performance of the roof drains associated with the reactor building, diesel generator building, and control building was being effectively controlled. More specifically, when evaluating whether the performance of the subject roof drains was being effectively controlled, the licensee did not consider the availability of the roof drains. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition

Report CR-CNS-2012-05993 to address recurrence. (NCV 05000298/2012005-02, "Failure to Adequately Monitor the Performance of Roof Drains")

(2) Failure to Follow Procedural Requirements During Roof Inspection

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings."

Description. On May 11, 2012, licensee personnel inspected the diesel generator roof in accordance with Station Procedure 0.27.1, "Periodic Structural Inspections of Structures" Revision 6. During this inspection, the licensee noted that some foreign material (vegetative matter, and trash) was on the roof. The licensee noted this on Station Procedure 0.27.1 Attachment 3, "Architectural Systems Inspection Checklist," and removed the identified foreign material.

On November 7, 2012, the inspectors examined the diesel generator roof. During their walkdown, the inspectors noted that unsecured floor matting was located on the roof. The inspectors determined that this matting had been installed for more than six months, and could move during a flooding event and block or interfere with water flow through the roof drains and/or scuppers.

The inspectors reviewed Station Procedure 0.27.1 and the licensee's inspection results from May 11, 2012. During their review, the inspectors noted that Attachment 3 of Station Procedure 0.27.1 required that all foreign material be removed from the roof. The inspectors determined that the licensee had failed to identify the matting as foreign material that could interfere with the roof drains and/or scuppers, and had therefore failed to remove it. The inspectors informed the licensee of their concerns, and the licensee initiated Condition Report CR-CNS-2012-08833 to capture this issue in the station's corrective action program. The licensee also immediately removed the matting from the roof pending further evaluation.

The licensee determined that the matting had been placed on the diesel generator roof sometime in the past due to an industrial safety concern with slipping due to rain/snow.

The inspectors determined that the licensee had made an assumption about what was considered foreign material on the roof since the matting had been added in response to an industrial safety concern, and that this assumption was the reason why they had not identified the matting as foreign material.

Analysis. The failure to follow the requirements of Station Procedure 0.27.1 on May 11, 2012, was a performance deficiency. The performance deficiency was determined to be more than minor and is therefore a finding because it is associated with the protection against external factors 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, in that the failure to recognize and remove foreign material from the diesel generator roof could have resulted in the roof drains and scuppers not being able to perform their intended

function when required, thereby. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process For Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than its technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The inspectors determined that the apparent cause of this finding was that the licensee had failed to use conservative assumptions when determining what constituted foreign material on the diesel generator roof. Therefore, the finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe in order to disapprove the action [H.1(b)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, states, in part, that, activities affecting quality shall be shall be accomplished in accordance with procedures. Contrary to the above, an activity affecting quality was not accomplished in accordance with procedures. Specifically, on May 11, 2012 the licensee did not accomplish diesel generator roof inspections in accordance with Station Procedure 0.27.1, "Periodic Structural Inspections of Structures," Revision 6. The procedure required all foreign material be removed from the roof, and on the subject date, the licensee inspected but did not remove from the roof matting that was foreign material. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-CNS-2012-08833 to address recurrence. (NCV 05000298/2012005-03, "Failure to Follow Procedural Requirements During Roof Inspection")

## **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:

- October 29, 2012, Bus 1G undervoltage relay testing
- December 31, 2012, Diesel generator availability during surveillance testing

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 two 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 and Functionality Assessments (71111.15)**

a. Inspection Scope

The inspectors reviewed the following assessments:

- October 30, 2012, Service water Division 1 hatch removed
- December 4, 2012, Diesel generator 1 voltage regulator cabinet
- December 31, 2012, Diesel generator building roof drains and scuppers
- December 31, 2012, Service water booster pump room cooling

The inspectors selected these operability and functionality assessments based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure technical specification operability was properly justified and to verify the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Updated Final Safety Analysis Report to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee

was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to follow Station Procedure 0.5OPS, "Operations Review of Condition Reports/Operability Determination," and properly document the basis for operability when a degraded or nonconforming condition is identified.

Description. On October 23, 2012, the inspectors identified that the licensee had removed the service water pump room hatches for service water system Division I, to support replacement of the service water Zurn strainer A. The inspectors questioned the potential effect of this configuration on Division II of the service water system which was supporting operability of diesel generator 2, given Division I and II service water pumps are contained in the same room in the intake structure. During their review the licensee determined that the guidance provided in the current station procedures was inadequate (See NCV 05000298/2012005-01, documented in Section 1R01). The licensee initiated Condition Reports CR-CNS-2012-08148 and CR-CNS-2012-08371 to capture these issues in the station's corrective action program. The licensee documented an operability evaluation in Condition Report CR-CNS-2012-08148.

During their review of the operability determination documented in Condition Report CR-CNS-2012-08148, the inspectors noted that the licensee had implemented the following compensatory measures for the inadequate procedure:

- (1) "With non-essential service water pump room heating, ventilation, and air conditioning in-service, with the hatches removed or doors open, monitor service water pump room temperature once per 12 hour shift. If service water pump temperature is less than 40 degrees Fahrenheit, deploy portable heating as required to maintain room temperature above 40 degrees Fahrenheit;
- (2) If the non-essential service water pump room heating, ventilation, and air conditioning is not in service with the hatches removed or doors open monitor service water pump room temperature hourly. If service water pump room temperature is less than 40 degrees Fahrenheit implement the same compensatory measure as with non-essential service water heating, ventilation, and air conditioning in-service."

In Condition Report CR-CNS-2012-08148, the licensee determined that implementing these compensatory measures would ensure that the necessary portion of the service water system would support the operability of technical specification required systems in the applicable Mode. (That is, diesel generator 2 would remain operable.) However, the

inspectors noted that the compensatory measure descriptions did not specify either the number of temporary heaters or the number and type of associated power supplies that would be required to maintain the service water pump room temperatures above 32 degrees Fahrenheit during a loss of offsite power coincident with the design-basis cold weather conditions. The inspectors therefore considered that the licensee's conclusions were based on unverified assumptions rather than specific information. The licensee initiated Condition Report CR-CNS-2012-08292 to address this issue.

The licensee initiated Engineering Change Request 12-037, "Service Water Support of the Service Water Pump Room Door Open and/or Ceiling Plugs Removed during Cold Weather Conditions," Revision 0. This determined the number of heaters required by the independent heating system, and the number of portable generators and/or alternative fuel sources for the independent heating system to maintain the service water pump room temperature above 32 degrees Fahrenheit during design basis cold weather conditions with a loss of off-site power.

Analysis. The licensee's failure to consider all relevant information and appropriately assess operability when a nonconforming condition was identified was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, in that the inadequate operability determination failed to identify the number of temporary heaters and their power supplies that would be necessary to maintain Division II of the service water system functional to support operability of diesel generator 2 during a loss of offsite power coincident with the licensing basis cold weather conditions, and thereby affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because the finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of the diesel generator capable of supplying one division of the onsite safety related power distribution subsystems, as defined in Appendix G. The inspectors determined that the apparent cause of this finding was that operators had failed to verify their assumptions associated with the compensatory measures to maintain service water system Division II function and support operability of diesel generator 2. Therefore, the finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe or order to disapprove the action [H.1(b)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V states, in part, that activities affecting quality shall be accomplished in accordance with procedures. Contrary to the above, an activity affecting quality was not accomplished in accordance with procedures. Specifically, on October 29, 2012, the licensee did not perform an

operability determination for safety related equipment in accordance with Administrative Procedure 0.5.OPS, "Operations Review of Condition Reports/Operability Determination," Revision 38 for Condition Report CR-CNS-2012-08184. More specifically, Administrative Procedure 0.5.OPS required the licensee to consider all relevant information, and when the licensee completed the operability determination documented in Condition Report CR-CNS-2012-08184, they did not consider either the number of temporary heaters or the number and type of associated power supplies that would be necessary to maintain operability during a loss of offsite power coincident with the design-basis cold weather conditions. To correct this condition, the licensee revised the compensatory measures to state the heat source requirements and power supplies for the independent heating system during design-basis cold weather conditions with a loss of off-site power to maintain service water system Division II functional to support operability of diesel generator 2 with the service water system Division I hatches removed. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition Reports CR-CNS-2012-07891, CR-CNS-2012-08184, and CR-CNS-2012-08292 to address recurrence. (NCV 05000298/2012005-04, "Failure to Consider All Relevant Information and Appropriately Assess Operability when a Degraded Nonconforming Condition was Identified")

## **1R18 Plant Modifications (71111.18)**

### Permanent Modifications

#### a. Inspection Scope

The inspectors reviewed key affected parameters associated with energy needs, materials, replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the permanent modifications listed below.

- November 30, 2012, Service water zurn strainer replacement
- December 31, 2012, Diesel generator 1 voltage regulator cabinet replacement

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 two samples for permanent plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

**1R19 Post-Maintenance Testing (71111.19)**

a. Inspection Scope

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

- November 4, 2012, Core spray A
- November 14, 2012, Diesel generator 1 maintenance window
- November 29, 2012, Appendix R modification testing
- November 29, 2012, Service water Zurn strainer modification 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 post-maintenance 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 four post-maintenance 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 October 14 through November 29, 2012, 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 observed portions of the shutdown and cooldown processes and 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) Failure to Maintain Design Control of the Service Water Booster Pumps

Introduction. The inspectors documented a Green, self-revealing, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Controls," associated with the licensee's failure to maintain design control of the unused flushing ports associated with the service water booster pumps.

Description. During reassembly in preparation for installation of service water booster pump D, under Work Order 4785757, using Maintenance Procedure 7.2.14, "Residual Heat Removal Service Water Booster Pump Overhaul and Replacement," Revision 41, the licensee identified that the high pressure volute area ports on the new service water booster pump D were configured differently than the installed service water booster pumps; the flushing port plugs were not welded. Maintenance personnel questioned whether the ports required inspection. The licensee researched Maintenance Procedure 7.2.14 and Condition Report NCR 93-153 to determine whether inspection of flushing ports was required, as called out in the procedure, given that this was the installation of new pump and not an inspection of an already installed pump. The licensee determined that the inspection required by Maintenance Procedure 7.2.14 should be conducted. The licensee did not recognize that the primary action for Condition Report NCR 93-153 was to weld-fill the unused flushing ports since the primary focus was on whether an inspection was required, and therefore did not pursue filling the flush ports.

On October 17, 2012, during a scheduled refueling outage with residual heat removal system Division II in service for shutdown cooling, the control room received a report of a leak in the service water booster pump D that was spraying water. The leak was immediately stopped when service water booster pump D was secured and isolated. Service water booster pump B was started to maintain residual heat removal system in service for shutdown cooling. The licensee declared service water booster pump D inoperable and initiated Condition Report CR-CNS-2012-07365 and CR-CNS-2012-07378 to capture this issue in the station's corrective action program. The licensee subsequently repaired service water booster pump D by implementing

Temporary Configuration Change 4917859, which welded the unused flushing plugs on the outside of the casing.

The licensee performed a root cause evaluation and documented it in Condition Report CR-CNS-2012-07365. During their evaluation, the licensee determined that failure of the unused flushing port plug was due to erosion of the high pressure volute area flushing port and plug by impingement of high pressure/high service water flow. Additionally, the licensee determined that corrective actions put in place for Condition Report NCR 93-153 in 1993 to preclude the purchase of service water booster pumps with high pressure volute area flushing ports had not been effectively implemented, in that licensee personnel had not identified that they were required to weld-fill the unused flushing ports.

To prevent recurrence, the licensee initiated the following corrective actions:

- (1) Revise the service water booster pump drawings to include the following statement. Pump shall not have side flushing holes in the high pressure area of the pump case. The only hole in the high pressure volute area of the pump case should be the top vent hole located at the pump case.
- (2) Validate with the vendor that each of new service water booster pumps does not include high pressure volute area flushing ports before the pumps are shipped to the station.
- (3) Develop a change evaluation document to change the design of the service water booster pumps to remove the high pressure volute area flushing ports and accept Temporary Change Configuration 4917859 permanently.

The inspectors reviewed the licensee's cause analysis and determined the identified cause was reasonable.

Analysis. The failure to maintain design control of the service water booster pumps was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone, in that the licensee installed a service water booster pump with an unused flushing port not welded, which resulted in degradation of the pumps casing and the pump not being able to perform its specified safety function, and thereby affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because the finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of shutdown cooling, as defined in Appendix G. The finding was determined to have a cross-cutting aspect in the area of problem identification and resolution associated with the corrective

action component because the licensee failed to thoroughly evaluate concerns with whether or not the unused flushing ports on service water booster pump D should be welded during the review of Maintenance Procedure 7.2.14, "Residual Heat Removal Service Water Booster Pump Overhaul and Replacement," Revision 41 and Condition Report NCR 93-153 [P.1(c)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion III, states, in part, that, measures shall be established to assure that and the design bases are correctly translated into specifications, drawings, procedures, and instructions." Contrary to the above, measures established by the licensee did not assure that and the design bases were correctly translated into specifications, drawings, procedures, and instructions. Specifically, from April 2012, until October 2012, measures established by the licensee did not assure that the current configuration of the service water booster pumps was correctly translated into station drawings or procurement documents. As a result, the licensee installed service water booster pump D with unused flushing ports that were not welded, and after 157 hours operation, an unused flush port plug developed a leak. In response, the licensee immediately declared the pump inoperable and repaired the service water booster pump D. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition Reports CR-CNS-2012-007365 and CR-CNS-2012-07378 to address recurrence. (NCV 05000298/2012005-05, "Failure to Maintain Design Control of the Service Water Booster Pumps")

(2) Failure to Perform Radiation Surveys Before Allowing Work to Commence

Introduction. The inspectors reviewed a Green self-revealing, non-cited violation of 10 CFR 20.1501(a), "Standards for Protection against Radiation," Subpart F, "Surveys and Monitoring," associated with the licensee's failure to perform an adequate radiation survey to determine and evaluate radiological hazards workers could be exposed to during a planned work activity.

Description. On November 16, 2012, a maintenance technician was attempting to install a temperature element for the reactor vessel head on the 961 feet elevation of the drywell, which was posted as a locked high radiation area. The technician was working under radiation Work Permit 2012-523 which had a dose limit of 150 millirem and a dose rate limit of 360 millirem per hour. Installing the temperature element required the technician to access the overhead, and when the technician went into the overhead area he received an unexpected dose rate alarm (with the highest dose rate recorded at 387 millirem per hour). The technician backed out of the area and contacted the radiological protection staff to inform them of the issue. Radiological protection personnel performed surveys in the area, documented as survey CNS-1211-0230. The maximum dose rates in the area were 1000 millirem on contact and 300 millirem per hour at 30 centimeters. The licensee updated the survey maps and initiated Condition Report CR-CNS-2012-09336 to capture this issue in the station's corrective action program.

During their review the licensee determined that at the locked high radiation area briefing the maintenance technician was briefed: (1) there was the possibility of a dose rate alarm on the travel path to the work area; (2) there was not a detailed survey for the 961 feet elevation overheads, so a radiation protection technician would accompany the maintenance technician to the area to monitor dose rates in the over head; (3) dose rates in the general work area were estimated to be between 20 to 80 millirem per hour; (4) the work was expected to take one hour; and (5) the expected dose for the work was 50 millirem. However, when the maintenance technician report to the control point and asked for the radiation protection technician to support the work, he was informed that there was no support available due to other activities in process. The radiation protection technician at the control point briefed the maintenance technician on what they believed to be current survey data for the overheads on 961 feet elevation, and allowed him to continue to perform the work without being accompanied by a radiation protection technician. The licensee determined that there was no survey data for the 961 feet elevation overheads, and was not able to determine what information the control point technician had used.

Inspectors determined that the difference between the maximum dose rate briefed (80 millirem per hour), and the actual dose rate of exposure (387 millirem per hour) was 307 millirem per hour. Considering that technician was expected to be in the work area for the period of one hour this exposure had the potential to result in more than 10 millirem of unplanned dose above the 50 millirem of expected dose that was briefed.

Analysis. The failure to perform an adequate radiation survey was a performance deficiency. This performance deficiency was determined to be more than minor, and is therefore a finding, because it was associated with the program and process attribute (exposure control) of the Occupational Radiation Safety cornerstone, in that workers were allowed to enter an area of unknown radiation dose rates and received an unintended and unexpected radiation exposure, and thereby affecting the associated cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because: (1) was not associated with as low as is reasonably achievable (ALARA) planning; (2) did not involve an overexposure; (3) there was no substantial potential for an overexposure; and (4) the licensee's ability to assess dose was not compromised. The inspectors determined that the apparent cause of this finding was that radiation protection personnel at the control point failed to verify their assumptions associated with current survey data prior to allowing workers into a locked high radiation area. Therefore, this finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe in order to disapprove the action [H.1(b)].

Enforcement. Title 10 CFR 20.1501(a), "Standards for Protection against Radiation," Subpart F, "Surveys and Monitoring," requires, in part, that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and that reasonably evaluate the extent of radiation levels and the potential radiological hazards that could be present. Contrary to the above, on November 16, 2012, the licensee did not make surveys to reasonably evaluate the extent of radiation levels and the potential radiological hazards that could be present. Consequently, a radiation worker was exposed to higher than anticipated dose rates and received a dose rate alarm. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-CNS-2012-09336 to address recurrence. (NCV 05000298/2012005-06, "Failure to Perform Radiation Surveys Before Allowing Work to Commence")

## **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.

- November 14, 2012, RWCU-MOV-15, containment isolation valve test
- November 15, 2012, Main steam isolation valve local leak- rate test, containment isolation valve test
- November 28, 2012, Diesel generator sequence loading test
- November 29, 2012, Hydrostatic and Scram time testing
- November 29, 2012, Drywell integrated leak rate test
- December 31, 2012, Scram discharge volume vent valves

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

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

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

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

a. Inspection Scope

The NSIR headquarters staff reviewed the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS Accession Number ML12236A092 as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is

subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

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

b. Findings

No findings were identified.

**1EP6 Drill Evaluation (71114.06)**

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on December 18, 2012, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the postevolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

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

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstones: Public Radiation Safety and Occupational Radiation Safety**

**2RS1 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

(1) Failure to Follow Radiation Protection Procedures

Introduction. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.4.1.a, resulting from a worker failing to follow radiation protection procedures. The violation had very low safety significance (Green).

Description. On April 21, 2011, a radiation worker was performing under vessel work in the 901 feet elevation of the drywell. He was signed onto Radiological Work Permit 2011-422, Task 2. The radiological work permit task had a dose limit of 300 millirem and a dose rate limit of 600 millirem per hour. If any of these limits were reached, the radworker was instructed to stop work and exit the Radiological Controlled Area (RCA). A drywell survey, dated April 4, 2011, showed the maximum general area dose rates were 300 millirem per hour at 30 cm with the use of shielding. It also showed the work area dose rates ranged from 60 to 170 millirem per hour at 30 cm.

The worker later searched for a power outlet to plug in a drop light. The outlet he found and decided to use was positioned behind some installed lead shielding on the reactor water cleanup line. According to an evaluation report, dated April 21, 2011, dose rates found in the area behind the shielding were 1200 millirem per hour. As a result, the radiation worker received an electronic alarming dosimeter dose rate alarm when he accessed the area behind the installed shielding. The actual peak dose rate received was 1160 millirem per hour. Upon receipt of the alarm, the individual failed to immediately stop work and leave the Radiological Controlled Area as instructed by procedures. In addition, procedures required a documented RP-800 briefing prior to entry of a high radiation area. The documented RP-800 briefing form reviewed stated that the worker's stay time limit was three hours. However, the worker's dosimeter log confirmed that the worker's actual stay time was approximately four and one half hours. The worker received the alarm four hours after entry. Management oversight should have prevented these issues.

Radiation workers are trained to obtain approval from Radiation Protection prior to modifying any installed shielding. Training Procedure GEN001-01-03, "Generic Radiation Worker Training," specifically instructs the radiation worker to never tamper with, remove, adjust, or modify installed shielding because altering it any way can drastically change the dose rates in the area. It states that permission from Radiation Protection is required before installing, removing, or moving shielding. The worker was not briefed on the area dose rates behind the shielding of the reactor water cleanup line, which means that he should not have accessed that area because shielding is an ALARA principle to lower radiation exposure. The failure to utilize shielding and/or alter installed shielding by exposing himself to the unshielded area within the drywell resulted in higher than expected dose rates and unplanned exposure. In response, the licensee investigated the occurrence, coached the individual on human performance, and entered the issue into the corrective action program as Condition Report CR-CNS-2011-04915.

Analysis. The failure to follow radiation protection procedures was a performance deficiency. The performance deficiency was more than minor because it was associated

with the Occupational Radiation Safety Cornerstone attribute (exposure control) of program and process and affected the cornerstone objective in that working outside the scope of procedures by accessing the higher dose rates behind the installed shielding had the potential to increase personnel dose. Additionally, the performance deficiency was similar to an example in Appendix E to Manual Chapter 0612, "Power Reactor Inspection Reports – Examples of Minor Issues." Example 6(h) states that an issue is more than minor if an individual is authorized to be in a high radiation area, but took unauthorized actions that significantly changed the radiological conditions in that area. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding had very low safety significance (Green) because: (1) it was not as low as is reasonably achievable finding; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. This finding had a cross-cutting aspect in the human performance area, work practices component, in that the licensee failed to provide adequate management oversight of work activities such that nuclear safety was maintained [H.4(c)].

Enforcement. Technical Specification Section 5.4.1.a requires that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Section 7.e of Regulatory Guide 1.33 requires radiation protection procedures for access control to radiation areas, including a radiation work permit system. Radiation Work Permit 2011-422 required a documented RP-800 briefing. The RP-800 briefing required the radiation worker to stop work and exit if a dose rate of 600 millirem per hour was received. It also limited the worker's stay time to three hours. Training Procedure GEN-001-01-03 required the worker to acquire approval from Radiation Protection prior to modifying any installed shielding. Contrary to these requirements, on April 21, 2011, a radiation worker did not implement written procedures as recommended in Appendix A to Regulatory Guide 1.33. Specifically, the worker failed to comply with his radiation work permit and procedural requirements by staying in the work area longer than three hours, not obtain approval from Radiation Protection prior to modifying installed shielding, and did not immediately stop work and exit the area when he received a dose rate alarm. Since this violation was of very low safety significance and was documented in the licensee's corrective action program as Condition Report CR-CNS-2011-04915, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2012005-07, "Failure to Follow Radiation Protection Procedures."

(2) Failure to Perform an Adequate Radiological Survey

Introduction. The inspectors reviewed a self-revealing, non-cited violation of 10 CFR 20.1501(a) for the licensee's failure to perform an adequate radiological survey. The violation had very low safety significance (Green).

Description. On October 19, 2012, a radiation worker was exposed to higher than anticipated dose rates while searching for a temperature element in the drywell around the torus (903 feet elevation). He was signed onto Radiation Work Permit 2012-073,

Task 2, with a dose limit of 30 millirem and a dose rate limit of 250 millirem per hour. He received an electronic alarming dosimeter dose rate alarm of 371 millirem per hour. Surveys reviewed by the inspectors confirmed that the maximum dose rate in the area used to brief the radiation worker was 150 millirem per hour. However, Survey CNS-1210-0253, dated October 19, 2012, was performed post receipt of the dose rate alarm and showed that the maximum dose rate in the area was 700 millirem per hour on contact. The licensee understood that the radiation worker would make contact with the piping and equipment situated in the drywell in order to traverse the area. Thus, the briefing should have addressed the contact dose rates, which were more appropriate to the work activity. The radiation worker failed to hear the dose rate alarm and remained in the area after receipt of the alarm.

The inspectors determined that the difference between the maximum dose rate briefed and actual dose rate of exposure was 550 millirem per hour. Considering that the radiation worker was in the torus area for approximately 10 minutes, this exposure had the potential to result in more than 10 millirem of unplanned dose, above the 30 millirem dose limit. In response, the licensee immediately restricted access to the torus area, performed a follow-up survey, and entered the issue into the corrective action program as Condition Report CR-CNS-2012-07577.

Analysis. The failure to perform an adequate radiological survey is a performance deficiency. The performance deficiency 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 the inadequate survey did not ensure exposure control for radiation workers. Additionally, the performance deficiency was similar to an example in Appendix E to Inspection Manual Chapter 0612, "Power Reactor Inspection Reports – Examples of Minor Issues." Example 6(f) states that an issue is more than minor if the inadequate survey resulted in radiological conditions such that the dose to an uninformed worker was likely to exceed an unplanned dose of greater than 10 millirem. In this case, the inspector determined the radiological conditions could likely result in unplanned dose of greater than 10 millirem. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding had very low safety significance (Green) because: (1) it was not as low as is reasonably achievable finding; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. This finding had a cross-cutting aspect in the human performance area, work control component, because the licensee failed to incorporate job site conditions that impacted radiological safety [H.3(a)].

Enforcement. Title 10 CFR 20.1501(a) requires, in part, that each licensee shall make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and that reasonably evaluate the extent of radiation levels and the potential radiological hazards that could be present. Contrary to the above, on October 19, 2012, the licensee did not make surveys to reasonably evaluate the extent of radiation levels and the potential radiological hazards that could be present. Specifically, radiation protection personnel performed an inadequate radiation survey of

the 903 feet elevation of the drywell, torus area. Consequently, a radiation worker was exposed to higher than anticipated dose rates and received a dose rate alarm. Since this violation was of very low safety significance and was documented in Condition Report CR-CNS-2012-07577, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000298/2012005-08, "Failure to Perform an Adequate Radiological Survey."

## **2RS3 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 on-site 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:

- 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 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

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

#### 4OA1 Performance Indicator Verification (71151)

##### .1 Mitigating Systems Performance Index - Emergency ac Power System (MS06)

###### a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - emergency ac power system sample as defined in Inspection Procedure 71151-05.

###### b. Findings

No findings were identified.

##### .2 Mitigating Systems Performance Index - High Pressure Injection Systems (MS07)

###### a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - high pressure injection systems performance indicator for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of October 2011

through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - high pressure injection system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Heat Removal System (MS08)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 2011 through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Mitigating Systems Performance Index - Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - residual heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Mitigating Systems Performance Index - Cooling Water Systems (MS10)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - cooling water system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the first quarter of 2011 through the second quarter of 2012. 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/hr) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 millirem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hr) 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.

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

a. Inspection Scope

The inspectors reviewed performance indicator data for the first quarter of 2011 through the second quarter of 2012. 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 Problem Identification and Resolution (71152)**

.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 reviewed 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 July, 2012 through December 31, 2012 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

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

## Substantive Cross-Cutting Issues Trend Review

### Cross-Cutting Theme in Decision Making H.1(b)

The H.1(b) cross-cutting theme was first identified in the mid-cycle assessment letter dated September 1, 2009. Corrective actions were implemented for training to correct knowledge deficiencies and inadequate documentation to address the five nonconservative decision making events. These nonconservative assumptions were associated with flooding calculations, inadequate evaluation of emergency diesel generator electrical connections, incorrect cause evaluations of emergency diesel generator lube oil piping cracks, lack of vibration criterion for emergency diesel generator Amphenol connection vibration monitoring, and inadequate evaluation of design changes for emergency diesel generator Amphenol connections. At the time, the NRC did not identify a substantive cross-cutting issue because the licensee appropriately recognized this theme and 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, the 2009 corrective actions were subsequently determined to be inadequate as demonstrated by six findings related to the use of conservative assumptions in decision making which 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. This theme was recognized by the licensee but the apparent cause evaluation determined there was no common cause for these nonconservative decisions and no corrective actions were required. The inspectors discussed this with the licensee who stated the evaluation would be reopened to determine corrective actions to correct this adverse nonconservative decision making theme.

During the 2010 end of cycle assessment period, the NRC determined that the H.1(b) theme included six findings from two cornerstones. In addition, 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 an 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)].

On October 25, 2011, the licensee notified the NRC of their readiness for inspection of this substantive cross-cutting issue, and the NRC completed that inspection on December 2, 2011. The NRC found that:

- During the current assessment period, six findings had been identified with cross-cutting aspects in H.1(b). The findings included requalification issues, errors in reactor building internal flooding analyses, errors in tornado wind effects on diesel generator fuel oil storage vent, and unplanned exposure to radiation workers.
- Five of these findings had been identified during the first two quarters of 2011, prior to full implementation of the licensee's corrective actions in August 2011.
- In August 2011, full implementation of the licensee's corrective actions included emphasizing the nuclear principles of decision-making reflects safety first, a questioning attitude is cultivated, and improving monitoring and oversight of performance related to decision making and assumptions. In addition, the licensee implemented actions to monitor lower-level decision-making indicators and case-study training with involved departments. The licensee also established measurable objectives to monitor the effectiveness of that training.
- In a public meeting held on October 27, 2011, the licensee provided assurance that their corrective actions to address human performance would be sustained.

With respect to the stated criteria for closing this substantive cross-cutting issue, the NRC considered that these results, "demonstrate sustainable performance improvements that are evidenced by effective implementation of an appropriate corrective action plan that resulted in no safety-significant inspection finding and a notable reduction in the overall of inspection findings with the same common theme." Therefore, because the licensee had satisfied the criteria stated in the 2010 end of cycle assessment letter, the substantive cross-cutting issue in H.1(b) was closed in the 2011 end of cycle assessment letter.

The licensee noted that the station had seven findings associated with H.1(b) and initiated Condition Report CR-CNS-2012-04267 (NRC Findings with a CCA of H.1(b) - Conservative Assumptions) on June 25, 2012. The licensee's investigation determined that current station performance confirms that there exist a number of individuals within departments that lack specific attributes and behaviors that support conservative decision making. The licensee determined that a corrective action that would determine whether these incidents are specific to individuals or a site weakness would be oral board examinations for the Engineering, Operations, Maintenance, and Radiation Protection supervision.

In the 2012 mid-cycle assessment letter, dated September 4, 2012, the NRC opened a substantive cross-cutting issue in the decision making component of the human performance area involving the use of conservative decision making [H.1(b)]. During the assessment period the NRC had identified eight findings associated with issues related to the use of conservative decision making. The NRC determined that a substantive cross-cutting issue existed because: (1) there was a concern with the licensee's scope of effort and progress in addressing this cross-cutting theme, and (2) this theme repeats a theme that had previously been identified in the 2009 mid-cycle and end-of-cycle assessment letters, declared a substantive cross-cutting issue in the 2010 end-of-cycle letter, reviewed in the 2011 mid-cycle letter, and closed in the 2011 end-of-cycle letter. The licensee acknowledged this theme and initiated CR-CNS-2012-05981 (NRC IR 2012-006 Identified Substantive Cross-Cutting Issue (SCCI)) on September 9, 2012.)

Condition Report CR-CNS-2012-05981 was subsequently closed to Condition Report CR-CNS-2012-06111 (Long Term Trend-Human Performance SCCIs) dated September 13, 2012. The licensee's investigation determined that the primary cause was that the station has not effectively applied knowledge and monitoring tools to proactively address the Human Performance area of Safety Culture cross-cutting themes, and contributing causes were: (1) the station has failed to effectively and consistently use trending to preclude the emergence of NRC cross-cutting themes or substantive cross-cutting issues, and (2) when a cross-cutting aspect trend is identified, the associated condition report significance level typically assigned does not prompt evaluation and corrective action to preclude escalation of the issue.

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. The licensee has developed actions to focus on conservative decision making and addressing cross-cutting trends before they escalate to a theme.

To date the NRC has identified 19 findings with the cross-cutting aspect of H.1(b) and this continues to comprise a cross-cutting theme. The licensee has implemented corrective actions to address this theme and the inspectors will continue to monitor for sustained improvement.

#### Cross-Cutting Theme in Problem Evaluation P.1(c)

In the 2011 mid-cycle assessment letter, dated September 1, 2011, the NRC staff identified that a cross-cutting theme existed in the corrective action program component of the problem identification and resolution area [P.1(c)]. At the time, the NRC did not identify a substantive cross-cutting issue due to the licensee's scope of effort in addressing the theme, and it being an emergent performance trend. The licensee acknowledged this theme and initiated CR-CNS-2011-08284 ("NRC Findings with a CCA of P.1(c)") on July 28, 2011. The investigation performed by CR-CNS-2011-08284 concluded that licensee's failure to use internal operating experience to review recurring legacy problems was the common factor for most of the findings. The licensee's

corrective actions for this theme were: qualifications for performing apparent cause evaluations, and programmatic changes to require operating experience reviews along with independent checks.

The end-of-cycle performance assessment letter, dated March 5, 2012, opened a substantive cross-cutting issue in the corrective action program component of the problem identification and resolution area [P.1(c)]. Specifically, the NRC noted that the licensee did not develop corrective actions to address identified concerns involving the utilization of resources to perform problem evaluations. The licensee acknowledged this theme and initiated CR-CNS-2012-01522 (NRC IR 2012-001 Identified Substantive Cross-Cutting Issue) on March 5, 2012. The licensee's investigation determined that the primary cause was management expectation error due to inadequate or inconsistent standards, secondary causes were: (1) inadequate management oversight and follow-up of the noted issues, and (2) organizational interface breakdowns as a result of inadequate organization to organization performance in addressing the noted issues.

Due to the continued cross-cutting theme associated with the corrective action program component of the problem identification and resolution area and NRC concerns with the licensee's scope of effort and progress in addressing this cross cutting theme, the mid-cycle assessment letter, dated September 4, 2012, maintained this substantive cross-cutting issue open. Specifically, the NRC noted that there had not been sustainable improvement in the cross-cutting area as evidenced by the identification of 8 findings during the assessment period in the corrective action program component of the problem identification and resolution area [P.1(c)]. The licensee acknowledged this theme and initiated Condition Report CR-CNS-2012-05980 (NRC IR 2012-006 Identified Substantive Cross-Cutting Issue) on September 6, 2012. The licensee's investigation determined that actions to address the issues identified in the previous apparent cause evaluation documented in Condition Report CR-CNS-2012-01522 (NRC IR 2012-001 Identified Substantive Cross-Cutting Issue) were completed from April 18, 2012 through June 12, 2012, and based on the current understanding of the substantive cross-cutting issue, the actions implemented under Condition Report CR-CNS-2012-01522 would have the desirable impact of sustained improved performance over a period of time.

On December 13, 2012, the licensee notified the NRC of their readiness for inspection of this substantive cross-cutting issue, and the NRC completed that inspection on December 31, 2012. The NRC found that:

- During the current assessment period, eight findings had been identified with cross-cutting aspects in P.1(c). The findings included the failure to correct design control issues, the failure to correct maintenance rule scoping issues, the failure to generate appropriate procedures in response to identified conditions, and the failure to properly assess operability.
- In June 2012, full implementation of the licensee's corrective actions included:

Issuing a standing order to require use of a technical pre-job brief for any operability evaluation assignment to ensure clear task definition is identified for engineering support required.

Engineering Director to establish specific resources in engineering to perform operability evaluations.

- Develop a risk tool to help operations personnel determine if issues identified in condition reports directly question site design basis to assess risk impact for appropriate resource support.
  - Establish and convene a change management panel consisting of managers from the Operations, Engineering, and Maintenance departments to review corrective action program action plans for category A, category B(High), and the top 10 risk significant related category B(Low) condition reports flagged by the condition review group once per month.
  - Establish the requirement for any corrective action derived from a category A condition report that impacts a site level process performance or changes how design configuration is supported by site processes requires a review by the site change management panel.
  - All condition report closeout reviews should be reviewed by an independent manager and not assigned to the original Condition Report Responsible Manager for category A , category B(High), and the top 10 risk significant related category B(Low) condition reports flagged by Condition Review Group.
- Five findings were identified during the first two quarters of 2012, prior to full implementation of the licensee's corrective actions in June 2012. Three findings have been identified following implementation of the licensee's corrective actions.

With respect to the stated criteria for closing this substantive cross-cutting issue, the inspectors determined that the results discussed above do not demonstrate sustainable performance improvements that are evidenced by effective implementation of an appropriate corrective action plan that have resulted in: (1) no safety-significant inspection finding; and (2) a notable reduction in the overall number of inspection findings with the same common theme. Specifically, to date the NRC has identified eight findings with the cross-cutting aspect of P.1(c) and this continues to comprise a cross-cutting theme and this does not represent a notable reduction in the overall number of inspection findings with the same common theme.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized a corrective action item documenting with the service water system. 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 action in a timely manner.

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

b. Findings

No findings were identified.

**40A5 Other Activities**

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

As documented in Inspection Reports 05000298/2011003; 2012005 the inspectors completed activities associated with TI 2515/177.

.2 (Closed) Temporary Instruction (TI) 2515/187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns"

a. Inspection Scope

The inspectors verified that licensee's walkdown package MS-1 "Machine Shop Elevation 903'-06'" contained the elements as specified in NEI 12-07 Walkdown Guidance document.

The inspectors accompanied the licensee on October 2, 2012 on their walkdown of the Turbine Building 882 feet 6 inch level south and verified that the licensee confirmed the following flood protection features:

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed.

- Reasonable simulation, if applicable to the site
- Critical structures, systems, and components dimensions were measured
- Available physical margin, where applicable, was determined
- Flood protection feature functionality was determined using either visual observation or by review of other documents

The inspectors independently performed their walkdown on December 4, 2012 of diesel generator 1, 903 feet 6 inch level and verified that the following flood protection features were in place:

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed.
- Reasonable simulation, if applicable to the site
- Critical structures, systems, and components dimensions were measured
- Available physical margin, where applicable, was determined
- Flood protection feature functionality was determined using either visual observation or by review of other documents

The inspectors verified that noncompliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's corrective action program. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation.

b. Findings

Introduction. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," associated with the licensee's failure to follow the requirements of Station Procedure 0.5CR, "Condition Report Initiation, Review, and Classification," and enter conditions adverse to quality in the station's corrective action program.

Description. As part of Temporary Instruction 187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns," inspectors accompanied the licensee's flooding walkdown team during their review of a plant area. During this walkdown the inspectors independently assessed the area and noted nonconformances and deficiencies with the plant configuration versus the design documents. Subsequently, the inspectors met with the walkdown team to discuss the inspection results. During this

discussion the inspectors noted that the walkdown team had identified the same issues as the inspectors, however, the team had not written condition reports for these issues.

The team told the inspectors that they had generated a spreadsheet to track items that were issues but they felt they required further research to determine the extent of the issue. The team told the inspectors that their intention was to wait until the end of the inspection and write one "roll-up" condition report that encompassed all of the issues. When the inspectors asked the team how they were assessing operability for the identified issues, the team explained that if a previous operability evaluation existed for the equipment, then they would review it and verify that it appeared to bound the identified issue, and for the other equipment, more research was needed to determine the extent of the issue and whether a non-conformance truly existed.

The inspectors noted that Administrative Procedure 0.5, "Conduct of the Condition Report Process," provides overall direction on the conduct of the corrective action program at Cooper Nuclear Station. It defines an adverse condition as "an event, defect, characteristic, state, or activity that prohibits or detracts from safe, efficient nuclear plant operation or storage of spent nuclear fuel. Adverse conditions include non-conformances, conditions adverse to quality, and plant reliability concerns." Section 7.1.3, states in part, "Employees and contractors are encouraged to write condition reports for a broad range of problems, and problems reported must include, but are not limited to, Adverse Conditions." Section 7.1.3.3 states, in part, "Any individual, including corporate, shared resources, or contracted personnel, who discovers an adverse condition is expected to ensure that appropriate site personnel are notified of the identified condition." The inspectors also noted that that Station Procedure 0.5.CR, "Condition Report Initiation, Review and Classification," provides additional instructions that, "If a problem is identified, then a CR should be initiated no later than the end of the current shift."

The inspectors determined that the licensee's flooding walkdown team had not complied with station requirements for initiating condition reports when adverse conditions were identified. The inspectors informed the licensee of their concerns and the licensee initiated Condition Report CR-CNS-2012-06753. As an immediate action, the licensee stopped all flooding walkdown activities and initiated condition reports for all issues that were being tracked on the walkdown team's spreadsheet to ensure that appropriate operability evaluations were performed.

Analysis. The failure to follow the requirements of Station Procedure 0.5CR and initiate condition reports when degraded nonconforming conditions were identified was a performance deficiency. The performance deficiency was determined to be more than minor, and is therefore a finding, because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone, in that the failure to write condition reports when degraded conditions were identified resulted in equipment being in an unevaluated state and its ability to perform its function being unknown, thereby affecting 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 Inspection Manual Chapter 0609,

Appendix A, "The Significance Determination Process For Findings At-Power," the finding was determined to have very low safety significance (Green) because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a flooding event. The inspectors determined that the apparent cause of this finding was that licensee personnel had failed to make safety/risk-significant decisions using a systematic process when degraded conditions were identified during in-plant walkdowns. Therefore, the finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to make safety/risk-significant decisions using a systematic process when faced with uncertain plant conditions [H.1(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, states, in part, that activities affecting quality shall be accomplished in accordance with procedures. Contrary to the above, activities affecting quality were not accomplished in accordance with procedures. Specifically, on October 2, 2012, while performing walkdowns for Temporary Instruction 2515/187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns," in accordance with Administrative Procedure 0.5, "Conduct of the Condition Report Process;" Revision 19, station personnel performing the subject walkdowns failed to initiate condition reports for degraded or nonconforming conditions as they identified those condition, as required by Administrative Procedure 0.5. This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy because it was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR-CNS-2012-06753 to address recurrence. (NCV 05000298/2012005-09, "Failure to Follow Procedure and Initiate Condition Reports When Degraded Nonconforming Conditions Were Identified")

.3 (Closed) Temporary Instruction (TI) 2515/188, "Seismic Walkdowns"

a. Inspection Scope

The inspectors accompanied the licensee on the following seismic walkdowns:

- September 26, 2012, Primary containment vent and nitrogen inert vent BD-H, control room, 932 feet
- September 27, 2012, Diesel generator 1 voltage regulator cabinet, diesel generator room 1, 903 feet
- October 18, 2012, Main steam isolation valve – D outboard MS-AOV-0886D, reactor building steam tunnel, 903 feet
- October 18, 2013, Main Control Center Q, Reactor Building Northwest 903

The inspectors verified that the licensee confirmed that the following seismic features associated with were free of potential adverse seismic conditions:

- Anchorage was free of bent, broken, missing or loose hardware

- Anchorage was free of corrosion that is more than mild surface oxidation
- Anchorage was free of visible cracks in the concrete near the anchors
- Anchorage configuration was consistent with plant documentation
- Structures, systems, and components will not be damaged from impact by nearby equipment or structures
- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment
- Attached lines have adequate flexibility to avoid damage
- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area
- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area
- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)

The inspectors independently performed their walkdown of the following:

- December 04, 2012, Service water pump crosstie/noncritical header SW-MOV-37MV, service water pump room, 903 feet
- December 18, 2012, Service water pump C, service water pump room, 903 feet
- December 18, 2012, Diesel generator 2 air receiver 2A, diesel generator room 2, 903 feet

The inspectors verified that the licensee confirmed that the following seismic features associated with were free of potential adverse seismic conditions:

- Anchorage was free of bent, broken, missing or loose hardware
- Anchorage was free of corrosion that is more than mild surface oxidation
- Anchorage was free of visible cracks in the concrete near the anchors
- Anchorage configuration was consistent with plant documentation
- Structures, systems, and components will not be damaged from impact by nearby equipment or structures

- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment
- Attached lines have adequate flexibility to avoid damage
- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area
- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area
- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)

Observations made during the walkdown that could not be determined to be acceptable were entered into the licensee's corrective action program for evaluation.

Additionally, the inspectors verified that items that could allow the spent fuel pool to drain down rapidly were added to the SWEL and these items were walked down by the licensee.

b. Findings

No findings were identified.

#### **40A6 Meetings, Including Exit**

##### Exit Meeting Summary

The inspectors conducted an inspection debrief with John Austin, Training Manager, and other members of the licensee's staff, on the results of the licensed operator requalification program inspection on August 14, 2012. The licensee acknowledged the findings presented. After reviewing the complete biennial requalification cycle examination results, the inspectors conducted a telephonic exit with Mr. Scott DeRosier, Operations Training Superintendent, on October 9, 2012. The licensee acknowledged the results as presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 26, 2012, the inspector presented the inspection results of the review of inservice inspection activities to Mr. K. Higginbotham, Acting General Manager of Plant Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On November 8, 2012, the inspectors presented the results of the radiation safety inspections to Mr. K. Higginbotham, Acting General Plant Manager of 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 January 3, 2013, the inspectors presented the inspection results to Mr. K. Higginbotham, General Plant Manager of Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

#### **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 the NRC Enforcement Policy for being dispositioned as a non-cited violation.

- .1 Title 10 CFR Part 50, Appendix B, Criterion III, states, in part, that, measures shall be established to assure that the design bases are correctly translated into specifications. Contrary to the above, measures established by the licensee did not assure that the design bases was correctly translated into specifications. Specifically, as of October 20, 2012, a vendor calculation, previously used by the licensee for the diesel generator 1 voltage regulator seismic evaluation, did not use the correct safety factors as specified in the updated safety analysis report. Using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Checklist 7, "BWR Refueling Operation with RCS Level > 23'," and determined that the finding is of very low safety significance (Green) because the finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of shutdown cooling, as defined in Appendix G. This violation was entered into the corrective action program as Condition Report CR-CNS-2012-07717
  
- .2 Technical Specification Section 5.7.1 requires, in part, that each entryway to high radiation areas in which the deep dose equivalent in excess of 100 millirem, but less than 1000 millirem in one hour (measured at 12 inches from the source of radiation) be barricaded and conspicuously posted as a high radiation area. Contrary to this requirement, on October 25, 2012, the 859 southeast quadrant sump under the torus area was a posted high radiation area, but the high radiation area swing gate was tied open, and thus not barricaded. This issue was documented in the licensee's corrective action program as Condition Report CR-CNS-2012-08062. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding had very low safety significance (Green) because: (1) it was not an as low as is reasonably achievable finding; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee Personnel

T. Barker, ESM Manager  
M. Barton, Exam Author  
J. Bebb, Staff Health Physicist, Radiation Protection  
R. Beilke, Manager, Radiation Protection  
D. Boes, R/R, Snubber Engineer  
S. Carbonnet, NDE Engineer  
J. Cass, Engineer, Systems Engineering  
S. DeRosier, Operator Training Superintendent  
J. Dixon, ALARA Supervisor, Radiation Protection  
J. Florence, Simulator Supervisor  
S. Freiling, Staff Health Physicist, Radiation Protection  
C. Herring, Superintendant, Operations Training, Requalification  
K. Higginbotham, General Plant Manager, Operations  
J. Hirner, Respiratory Program Technician, Radiation Protection  
D. Madsen, Licensing Engineer  
T. McClure, ISI Engineer  
E. McCutchen, Senior Licensing Engineer, Licensing  
R. McDonald, Senior Health Physicist, Radiation Protection  
J. Olberding, Licensing Specialist  
J. Smith, Maintenance Weld Coordinator  
C. Sunderman, Assistant Training Manager, Radiation Protection  
D. Van Der Kamp, Manager, Licensing

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000298/2012005-01	NCV	Inadequate Maintenance Procedure for the Service Water Pump Room (Section 1R01)
05000298/2012005-02	NCV	Failure to Adequately Monitor the Performance of Roof Drains (Section 1R12)
05000298/2012005-03	NCV	Failure to Follow Procedural Requirements During Roof Inspection (Section 1R12)
05000298/2012005-04	NCV	Failure to Consider All Relevant Information and Appropriately Assess Operability when a Degraded Nonconforming Condition was Identified (Section 1R15)
05000298/2012005-05	NCV	Failure to Maintain Design Control of the Service Water Booster Pumps (Section 1R20)
05000298/2012005-06	NCV	Failure to Perform Radiation Surveys Before Allowing Work to Commence (Section 1R20)
05000298/2012005-07	NCV	Failure to Follow Radiation Protection Procedures (Section 2RS1)
05000298/2012005-08	NCV	Failure to Perform an Adequate Radiological Survey (Section 2RS1)
05000298/2012005-09	NCV	Failure to Follow Procedure and Initiate Condition Reports When Degraded Nonconforming Conditions Were Identified (Section 4OA5)

### Closed

2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01) (Section 4OA5)
2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5)
2515/188	TI	Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns (Section 4OA5)

## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

#### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
10-009	Engineering Evaluation, "Service Water Intake Structure, Heating, and Ventilation"	0
12-037	Engineering Request Change, "Service Water Support of Operability with the Service Water Pump Room Door Open and/or Ceiling Plugs Removed during Cold Weather Conditions"	0
91-232	NEDC, "Service Water Pump Room Loss of Heating"	4

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
5.1Weather	Emergency Procedure, "Operation During Weather Watches and Warnings"	11
7.2.15	Maintenance Procedure, "Service Water Pump Column Maintenance and Bowl Assembly Replacement"	35
7.2.16	Maintenance Procedure, "Backup Fire Pump Maintenance"	15
7.2.30	Maintenance Procedure, "Service Water Strainer Maintenance"	19

#### CONDITION REPORTS

CR-CNS-2009-10389 CR-CNS-2012-07891 CR-CNS-2012-08148 CR-CNS-2012-08184  
CR-CNS-2012-08292 CR-CNS-2012-08371

### Section 1R04: Equipment Alignment

#### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
11-110	NEDC	0
12-019	NEDC	0
12-020	Engineering Evaluation	
88-285	NEDC	4

**Section 1R04: Equipment Alignment**

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
92-063	NEDC	2
2040, Sheet 1	Burns & Roe, "Flow Diagram RHR System"	N82
2040, Sheet 2	Burns & Roe, "Flow Diagram RHR System"	N18
4755155	PE	
4915272	PE	
6033461	Change Evaluation Document	
Section X, 10.3.5.4	USAR, "Auxiliary Systems"	

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2.2.38	Operations Procedure, "HVAC Control Building"	37
2.3_R.1	Operations Procedure, "Panel R – Annunciator R-1"	12

CONDITION REPORTS

CR-CNS-2012-08070 CR-CNS-2012-09175 CR-CNS-2012-09217 CR-CNS-2012-09956

WORK ORDERS

4895607

**Section 1R05: Fire Protection**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0.39	Administrative Procedure, "Hot Work"	47

CONDITION REPORTS

CR-CNS-2012-09525

## Section 1R08: Inservice Inspection Activities

### DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
811-3	16"-300# Tilting Disc Check Valve Cast Carb. Stl. Stellite Trim-B.W.Ends	B
2045	Flow Diagram, Standby Liquid Control System, sheet 2	N21
KPN-SKE-010	Klewit Power Nuclear Cooper Zurn Strainer & Piping Replacement Project	2
SKE-6029209-M-011	24" & 20" SW Spool 191-1-657 ISO 2852-3	1
SKE-6029209-M-021	24" and 20" Piping and Support Installation Intake Structure Room	0

### 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
CNSLO-2009-00191 CA-4	Inservice Inspection Program Focused Assessment Report	August 29, 2009
CNSLO-2011-0013-0029	Welding & Repair / Replacement Program Assessment Report	December 8, 2011
Calculation NEDC 12-055	Evaluation of Pipe Support RH-H6	October 9, 2012

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0.29.3	Regulatory Interface	3
0.30	ASME Section XI Repair/Replacement and Temporary Code and Non-2Code Repair Procedure	26
0.5	Conduct of the Condition Report Process	69
0.5.CR	Condition Report Initiation, Review, and Classification	18
3.28.5	Administrative Controls for Non-Destructive Examination	1

## PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
54-ISI-240	Visible Solvent Removable Liquid Penetrant Examination Procedure	47
54-ISI-30	Written Practice for the Qualification and Certification of NDE Personnel	17
54-ISI-835	Ultrasonic Examination of Ferritic Piping Welds	14
54-ISI-850	Manual Ultrasonic Examination of BWR Reactor Vessel Nozzle Inner Radius Regions and Nozzle to Shell Welds (inner 15%)	7
7.7.1	Special Process Control Maintenance Procedure	15
7.7.10.2	P1-B Welding Procedure Specification	5
7.7.10.4	P1-G Welding Procedure Specification	5
7.7.10.6	P1-BG Welding Procedure Specification	4
7.7.5.1	Welding Material Care, Storage, and Control Procedure CNS-WFMC	7
7.2.26.2	Bolted or Screwed Bonnet Check Valve Maintenance	16
QCP-12	Calibration of Inspection Instruments	14
QCP-9.1.0	Visual Examination – General Requirements	2
QCP-9.1.6-CNS-NUC2010117	Visual Examination of Class MC Metal Containment Components	0
TCM-3	Qualification and Certification of Nondestructive Examination Personnel	13

## CONDITION REPORTS

CR-CNS-2011-02774	CR-CNS-2011-03091	CR-CNS-2011-03220	CR-CNS-2011-03552
CR-CNS-2011-03658	CR-CNS-2011-03728	CR-CNS-2011-03730	CR-CNS-2011-04055
CR-CNS-2011-04187	CR-CNS-2011-04254	CR-CNS-2012-06784	CR-CNS-2011-08052

## WORK ORDERS

4741859	4824497
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**Section 1R11: Licensed Operator Requalification Program**

**MISCELLANEOUS DOCUMENTS**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Remediation Plan	July 27, 2012
	Simulator Open Discrepancies Report	July 3, 2012
	Simulator Performance Review Committee Meeting Minutes	June 25, 2010
	Simulator Performance Review Committee Meeting Minutes	September 28, 2010
	Simulator Performance Review Committee Meeting Minutes	December 14, 2010
	Simulator Performance Review Committee Meeting Minutes	June 15, 2011
	Simulator Performance Review Committee Meeting Minutes	September 21, 2011
	Simulator Performance Review Committee Meeting Minutes	March 22, 2012
	Simulator Performance Review Committee Meeting Minutes	June 13, 2012
	Simulator Performance Tests, Transient 1	April 11, 2011
	Simulator Performance Tests, Transient 6	April 11, 2011
	Simulator Performance Tests, Transient 10	April 11, 2011
	Simulator Stability Test	6
	Transient Performance Benchmark Comparison Data, Transients 1, 6, 10	April 11, 2011
2.0.7	CNS Licensed Operator Requalification Program	6
3.4	Configuration Change Control	55
CNSLO 2012-66 CA02	IP 71111.11 Pre-Inspection Assessment	May 17, 2012
EDP-06	Supporting Requirements for Configuration Change Control	46
EN-TQ-201-04	SAT – Implementation Phase	2

## Section 1R11: Licensed Operator Requalification Program

### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
LO-CNSLO-2011-00111	Focused Self-Assessment – Operator Fundamentals (Human Performance – Simulator & Plant)	August 5, 2011
NTP8.1	Administration of Licensed Operator Medical Examination Program	14
NTP8.2	Preparation and Submittal of Operator and Senior Operator License Applications	6
SDP-10-0025	Simulator Discrepancy Package	
SDP-10-0095	Simulator Discrepancy Package	July 15, 2012
SKL034-10-10X	JPM	1
SKL034-10-51	JPM	1
SKL034-11-03	JPM	1
SKL034-20-99	JPM	1
SKL034-21-14	JPM	1
SKL034-21-42	JPM	1
SKL034-21-57	JPM	1
SKL034-21-76	JPM	1
SKL034-22-03	JPM	1
SKL034-30-21	JPM	1
SKL034-30-61	JPM	1
SKL034-40-XX	JPM	1
SKL052-52-83	Simulator Scenario	1
SKL052-52-86	Simulator Scenario	1
SKL052-52-138	Simulator Scenario	1
SKL052-52-144	Simulator Scenario	1
SKL052-52-145	Simulator Scenario	1
SKL052-52-146	Simulator Scenario	1
SMP-10-0019	Simulator Modification Package	September 27, 2010

## Section 1R11: Licensed Operator Requalification Program

### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SMP-10-0044	Simulator Modification Package	June 23, 2011
SMP-11-0027	Simulator Modification Package	December 15, 2011
SMP-12-0071	Simulator Modification Package	June 28, 2012
TPP201	Licensed Operator Active/Reactivation/Medical Status Maintenance Program	58

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OTP803	Development of Operations Training JPMs	5
OTP804	Requalification Scenario Exercise Guide Development	22
OTP805	Licensed Operator Requalification Biennial Written Exam	15
OTP806	Conduct of Simulator Training and Evaluation	20
OTP808	Open Reference Examination Test Item Development	1
OTP809	Operator Requalification Examination Administration	16
OTP810	Operations Department Examination Security	11
OTP812	Conduct of Operator Oral Boards	12
OTP813	Annual Operating Requal. Exam Development and Admin.	7

### CONDITION REPORTS

CR-CNS-2011-00795 CR-CNS-2011-00811 CR-CNS-2012-01562 CR-CNS-2012-03595  
CR-CNS-2012-05122 CR-CNS-2012-05471 CR-CNS-2012-05482 CR-CNS-2012-05483

## Section 1R12: Maintenance Effectiveness

### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>
10.3.4.5.4	USAR

**Section 1R12: Maintenance Effectiveness**

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>
DG-PF01	Performance Criteria Basis Document
DG-SD01	Performance Criteria Basis Document

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>
07-027	Engineering Evaluation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0.50.5	Administrative Procedure, "Outage Shutdown Safety"	27
2.2.20.1	Operations Procedure, "Diesel Generator Operations"	58
6.2EE.302	Surveillance Procedure, "4160V Bus 1G Undervoltage Relay and Relay Timer Functional Test (DIV 2)"	

CONDITION REPORTS

CR-CNS-2006-03093 CR-CNS-2012-07035

WORK ORDERS

4850523

**Section 1R15: Operability Evaluations**

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	
10-009	Engineering Evaluation, "Service Water Intake Structure, Heating, and Ventilation"	0
12-037	Engineering Request Change, "Service Water Support of Operability with the Service Water Pump Room Door Open and/or Ceiling Plugs Removed during Cold Weather Conditions"	0

## Section 1R15: Operability Evaluations

### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	
91-232	NEDC, "Service Water Pump Room Loss of Heating"	4

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2.2.38	Operations Procedure, "HVAC Computer Room"	37
7.2.30	Maintenance Procedure, "Service Water Strainer Maintenance"	19

### CONDITION REPORTS

CR-CNS-2009-10389 CR-CNS-2012-06130 CR-CNS-2012-06579 CR-CNS-2012-07891  
CR-CNS-2012-08148 CR-CNS-2012-08292 CR-CNS-2012-08733 CR-CNS-2012-09731  
CR-CNS-2012-09956

## Section 1R18: Plant Modifications

### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
4920141	TCC	
6016581	Change Evaluation Document, "DG Voltage Regulator Upgrade"	
6029209	Change Evaluation Document, "Zurn Service Water Strainer Replacements"	
6034463	Change Evaluation Document, "DG 1 Voltage Regulator Alternate Anchoring System"	
Section X, 8.2.8.1	USAR, "Auxiliary Systems"	January 29, 2003

## Section 1R19: Post-Maintenance Testing

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
6.SW.102	Surveillance Procedure, "Service Water System Post-LOCA"	40

**Section 1R19: Post-Maintenance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Flow Verification”	
6.1CS.101	Surveillance Procedure, “Core Spray Test Mode Surveillance Operation (IST)(DIV 1)	24
6.1CS.201	Surveillance Procedure, “CS Motor Operated Valve Operability Test (IST)(DIV 1)	16
6.1DG.101	Surveillance Procedure, “Diesel Generator 31 Day Operability Test (IST)(DIV 1)”	73
6.1DG.302	Surveillance Procedure, “Undervoltage Logic Functional, Load Shedding, and Sequential Loading Test (DIV 1)”	72
6.1SW.101	Surveillance Procedure, “Service Water Surveillance Operation (DIV 1)(IST)”	39
6.1SW.302	Surveillance Procedure, “SW Pressure Instrument Calibration and Isolation Logic Functional Test (DIV 1)	7
6.1SW.303	Surveillance Procedure, “SW Pressure Instrument Calibration and Pump Auto Start Functional Test (DIV 1)	10
6.2RHR.201	Surveillance Procedure, “RHR Power Operated Valve Operability Test (IST)(DIV 2)	24
6.2SW.101	Surveillance Procedure, “Service Water Surveillance Operation (DIV 2)(IST)”	41

CONDITION REPORTS

CR-CNS-2012-07868

WORK ORDERS

4465361	4741895	4791771	4840099
4919196			

## Section 1R20: Refueling and Other Outage Activities

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
7.2.14	Maintenance Procedure, "RHR SWBP Overhaul and Replacement"	41

### CONDITION REPORTS

CR-CNS-2012-07035 CR-CNS-2012-07365 CR-CNS-2012-07378 CR-CNS-2012-10036

### WORK ORDERS

4785757

## Section 1R22: Surveillance Testing

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
6.1DG.302	Surveillance Procedure, "Undervoltage Logic Functional, Load Shedding, and Sequential Loading Test (DIV 1)"	72
6.2DG.302	Surveillance Procedure, "Undervoltage Logic Functional, Load Shedding, and Sequential Loadin Test (DIV 2)"	60
6.MISC.502	Surveillance Procedure, "ASME Class 1 System Leakage Test"	42
6.PC.201	Surveillance Procedure, "Primary Containment Isolation Power Operated Valve Operability and Closure Timing Test (IST)"	30
6.PC.504	Surveillance Procedure, "Primary Containment Integrated Leak Rate Test"	11
6.PC.513	Surveillance Procedure, "Main Steam Local Leak Rate Tests"	21
6.PC.520	Surveillance Procedure, "Reactor Water Cleanup (RWCU) Local Leak Rate Tests"	9
6.PC.524	Surveillance Procedure, "Primary Containment Airlock Local Leak Rate Tests"	20
6.PC.525	Surveillance Procedure, "Hatch and Flange Local Leak Rate Tests"	18
10.9	Nuclear Performance Procedure, "Control Rod Scram Time"	62

**Section 1R22: Surveillance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Evaluation”	

CONDITION REPORTS

CR-CNS-2012-07528	CR-CNS-2012-07529	CR-CNS-2012-09402	CR-CNS-2012-09404
CR-CNS-2012-09405	CR-CNS-2012-09407	CR-CNS-2012-09410	CR-CNS-2012-09418
CR-CNS-2012-09443	CR-CNS-2012-09760		

WORK ORDERS

4847963

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EPIP 5.7.1	Emergency Classification	46

**Section 2RS1: Radiological Hazard Assessment and Exposure Controls**

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
QAD 2012-0031	QA Audit 12-03, “Radiological Controls”	July 30, 2012
QAD 2012-0034	CNS Quality Assurance Performance Assessment Report	August 03, 2012
2011-11759	High Radiation Area and Locked High Radiation Area Controls	August 31, 2012
CNS-1211-0043	Survey of Drywell 921’ – MS-CV-26 Remove/Replace Job	November 03, 2012
CNS-1211-0067	Survey of Drywell 901’ – Scaffold Build	November 05, 2012

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Source Leak Test Report	December 12, 2011
	Source Leak Test Report	June 27, 2012
	Radioactive Source List Report	October 03, 2012
	RE-27 Cavity Decontamination IPTE Briefing	November 07, 2012
	Outage Update for RE27	November 7-8, 2012
CPS RP-11A	High Radiation Area Gate Key Log	November 08, 2012

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	41
9.EN-RP-100	Radiation Worker Expectations	0
9.EN-RP-101	Access Control for Radiologically Controlled Areas	9
9.EN-RP-108	Radiation Protection Posting	6
9.EN-RP-311	Electronic Alarming Dosimeters	2
9.ENN-RP-102	Radiological Control	3
9.ENN-RP-106-1	Radiation and Contamination Surveys	15
9.RADOP.1	Radiation Protection at CNS	10
9.RADOP.10	Radioactive Sources Control and Accountability	18
GEN001-01-03	Generic Radiation Worker Training	23

RADIOLOGICAL WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2011-422	Drywell Under Vessel Activities	4

## RADIOLOGICAL WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2012-005	Routine Access / Management Operations	1
2012-073	Reactor Building Activities in High Radiation Areas	3
2012-527	RE27 Drywell/Steam Tunnel Operations Activities/Support	0
2012-539	RE27 Drywell/Steam Tunnel: Drywell Coordinator, Engineering Support, NRC Tours	0

## CONDITION REPORTS

CR-CNS-2011-03192	CR-CNS-2011-03265	CR-CNS-2011-03564	CR-CNS-2012-03688
CR-CNS-2011-04915	CR-CNS-2011-05131	CR-CNS-2011-07924	CR-CNS-2011-09140
CR-CNS-2011-09434	CR-CNS-2011-09785	CR-CNS-2011-10363	CR-CNS-2011-10491
CR-CNS-2011-11083	CR-CNS-2011-11124	CR-CNS-2011-11134	CR-CNS-2011-11759
CR-CNS-2011-11760	CR-CNS-2012-00918	CR-CNS-2012-03543	CR-CNS-2012-03558
CR-CNS-2012-05758	CR-CNS-2012-07412	CR-CNS-2012-07577	CR-CNS-2012-07644
CR-CNS-2012-08062	CR-CNS-2012-08535		

## **Section 2RS3: In-plant Airborne Radioactivity Control and Mitigation**

### AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
22851	NUPIC Audit of NCS Corporation, Columbus, Ohio	May 15, 2012
6.HV.104	Control Room Emergency Fan Charcoal and HEPA Filter Leak Test, Fan Capacity Test, and Charcoal Sampling	December 13, 2011
6.HV.106	Control Room Envelope Integrity Test	June 11, 2010
CNS RP-223	Scott SCBA Flow Test Review	March 15, 2011
CNS RP-402	SCBA Functionals	October 4, 2012
CNS RP-410	Respirator Inspection	September 28, 2012
CNS-RP-416	Annual Respiratory Protection Program Evaluation	April 20, 2012

### CALIBRATION DOCUMENTATION

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
CNS RP-411	Plant Service Air – Air Quality Data Sheet	August 25, 2012
CNS RP-415	Breathing Air Compressor – Air Quality Data Sheet	March 29, 2012
CNS RP-415	Breathing Air Compressor – Air Quality Data Sheet	June 22, 2012
9.RADOP.20	Attachment 1 – DOP Test Data Sheet	September 27, 2012

### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Application of 10 CFR 61 Nuclides to Air Samples	
10-015761	Control Room Charcoal	June 23, 2010
11-016411	CREFS Charcoal Sample	November 29, 2011
(W) 01-05 R4	Airborne Radioactivity Scaling Factor for Hard to Identify Nuclides	August 29, 2011

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
9.EN-RP-122	Alpha Monitoring	1
9.RADOP.17	Operation and Maintenance of HEPA Vacuum Cleaners and HEPA Ventilation Units	4
9.RADOP.20	HEPA Vacuums and Portable HEPA Filter Unit Filter Leak Testing	0
9.RADOP.5	Airborne Radioactivity Sampling	24
9.RESP.1	Respiratory Protection Program	14
9.RESP.2	Self-Contained Breathing Apparatus	22,23
9.RESP.5	Plant Service Air Quality Checks	3
9.RW.7	Waste Stream Sampling	13

## CONDITION REPORTS

CR-CNS-2011-05272 CR-CNS-2011-09044 CR-CNS-2011-09049 CR-CNS-2011-09633  
CR-CNS-2011-10861 CR-CNS-2011-11437 CR-CNS-2011-11438 CR-CNS-2011-12063  
CR-CNS-2012-00452 CR-CNS-2012-01735 CR-CNS-2012-02858 CR-CNS-2012-04097  
CR-CNS-2012-04479 CR-CNS-2012-06666 CR-CNS-2012-06793 CR-CNS-2012-07457  
CR-CNS-2012-08889 CR-CNS-2012-08896 CR-CNS-2012-08899 CR-CNS-2012-08902  
CR-CNS-2012-08903

### **Section 40A1: Performance Indicator Verification**

## MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	ROP Parent Process Data Review	November 5, 2012
	Shuttle Tube Exposure Report (Redacted)	April 22, 2011
2011-405	Radiological Work Permit: Remove/Replace CRD's Under Vessel	00
2011-422	Radiological Work Permit: Drywell Under Vessel Activities	02
Attachment 7	PI Documentation and Data Review Form: Occupational Exposure Control Effectiveness	April 2011
Attachment 9.3	PI Documentation and Data Review Form: Occupational Exposure Control Effectiveness	October 2012

## PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0-EN-LI-114	Performance Indicator Process	5C0

## CONDITION REPORTS

CR-CNS-2011-03763 CR-CNS-2011-04658 CR-CNS-2011-04891 CR-CNS-2011-11759  
CR-CNS-2012-01141 CR-CNS-2012-01147 CR-CNS-2012-03558

**Section 40A2: Identification and Resolution of Problems**

CONDITION REPORTS

CR-CNS-2006-03093 CR-CNS-2006-10017 CR-CNS-2007-02818 CR-CNS-2009-08110  
CR-CNS-2009-10389 CR-CNS-2011-00139 CR-CNS-2011-00536 CR-CNS-2011-01619  
CR-CNS-2012-07035