



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4511

February 8, 2013

Mr. M.E. Reddemann
Chief Executive Officer
Energy Northwest
P.O. Box 968, Mail Drop 1023
Richland, Wa 99352-0968

SUBJECT: COLUMBIA GENERATING STATION – NRC INTEGRATED INSPECTION
REPORT 05000397/2012005

Dear Mr. Reddemann:

On December 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. The enclosed inspection report documents the inspection results which were discussed on January 3, 2013, with Mr. W. Hettel, Vice President 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.

Four NRC identified and one self-revealing finding of very low safety significance (Green) were identified during this inspection. All of these findings were determined to involve violations of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations (NCVs) 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 Columbia Generating 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 Columbia Generating Station.

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

M.E. Reddemann

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Sincerely,

/RA/

Wayne Walker, Branch Chief
Project Branch A
Division of Reactor Projects

Docket No.: 05000397
License No.: NPF-21

Enclosure: NRC Inspection Report 05000397/2012005
w/ Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000397
License: NPF-21
Report: 05000397/2012005
Licensee: Energy Northwest
Facility: Columbia Generating Station
Location: Richland, WA
Dates: September 22, 2012 through December 31, 2012
Inspectors: J. Groom, Senior Resident Inspector
M. Hayes, Resident Inspector
C. Henderson, Resident Inspector
J. Laughlin, Emergency Preparedness Inspector, NSIR
Approved By: W. Walker, Chief
Project Branch A
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000397/2012005; 09/22/2012 – 12/31/2012; Columbia Generating Station, Integrated Resident and Regional Report; Maintenance Effectiveness; Operability Evaluations and Functionality Assessments; Surveillance Testing; Problem Identification and Resolution.

The report covered a 3-month period of inspection by resident inspectors. Five 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, "Procedures," for the failure to follow Procedure OI-09, "Operations Standards and Expectations," Revision 56, when authorizing work on emergency core cooling system boundary components. Specifically, the licensee failed to understand the technical specification impact when performing emergency core cooling system venting activities. Upon identification of this deficiency, the licensee issued Night Order 1419 documenting the requirement to declare the emergency core cooling systems inoperable while performing technical specification required fill and vents. The licensee entered this issue into the corrective action program as Action Request 272948.

This performance deficiency was more than minor because it adversely affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding was of very low safety significance because the finding did not represent a loss of safety function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, did not represent an actual loss of function of one or more non-technical specification equipment for greater than 24 hours. The inspectors determined the finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to verify the validity of the underlying assumption that the emergency core cooling system was operable while performing venting operations [H.1(b)]. (Section 1R15)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow Procedure SWP-CAP-01, "Corrective Action Program," Revision 24. Specifically, the licensee failed to initiate a condition report based on operating experience involving a failed circuit breaker due to inadequate lubrication. This represented an issue that could potentially affect equipment operability or functionality and therefore required prompt notification to the main control room as specified in Step 4.1.4 of SWP-CAP-01. The licensee entered this issue into the corrective action program as Action Request 276002.

This performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding was of very low safety significance because the finding did not represent a loss of safety function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, and did not represent an actual loss of function of one or more non-technical specification equipment for greater than 24 hours. The inspectors determined the performance deficiency had a cross-cutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to evaluate and communicate external operating experience to internal stakeholders in a timely fashion [P.2(a)]. (Section 1R15)

Cornerstone: Barrier Integrity

- Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a, "Procedures," for failure to provide suitable work instructions for maintenance on control room emergency ventilation system dampers. On November 11, 2011, operations received an unexpected annunciator indicating that control room emergency filtration damper WMA-AD-51A was bound in an intermediate position. Subsequent review determined that the linkages were misaligned on February 21-22, 2007, which subjected the swivels to excessive spring forces causing them to slip over a period of time. The inspectors reviewed the maintenance task outline in Work Order 01126994 and identified that the work instructions did not have appropriate steps to ensure the alignment of linkages associated with damper WMA-AD-51A. The licensee entered this issue into the corrective action program as Action Request 252200.

This performance deficiency was more than minor because it adversely affected the procedure quality attribute of the Barrier Integrity Cornerstone objective to ensure that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings

At-Power,” the inspectors determined the finding was of very low safety significance because the finding only represented a degradation of the radiological barrier provided for by the control room. The inspectors determined that this finding did not have a cross-cutting aspect since the cause of the inadequate maintenance procedures was due to a performance deficiency that occurred in 2007, and therefore was not reflective of current licensee performance. (Section 1R12)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for the failure of the licensee to perform required surveillance testing of the control room heating, ventilation and air conditioning (HVAC) system. On October 30, 2012, the inspectors identified that the licensee’s procedures for testing the heat removal capability of the control room HVAC system tested the service water pump house coolers but did not test any components in the control room HVAC system. Following identification of this issue, the shift manager declared Technical Specification Surveillance Requirement 3.7.4.1 missed for both trains of control room HVAC and applied Surveillance Requirement 3.0.3 which allowed the licensee to delay declaring the limiting condition for operation not met for a limited period of time following the performance of a risk assessment. This issue was entered into the licensee’s corrective action program as Action Request 273408.

This performance deficiency was more than minor because it adversely affected the procedure quality attribute of the Barrier Integrity Cornerstone objective to ensure that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” the inspectors determined the finding was of very low safety significance because the finding only represented a degradation of the radiological barrier provided for by the control room. The inspectors determined that this finding did not have a cross-cutting aspect since the decision to test a service water pump house room cooler in place of the control room HVAC cooler was made at the time of improved standard technical specifications implementation around 1998 and was therefore not reflective of current licensee performance. (Section 1R22)

- Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, “Procedures,” for the licensee’s human performance associated with operation of the residual heat removal system shutdown cooling isolation logic. On October 1, 2012, following a review of Action Request 270846, the inspectors identified 29 examples where the licensee disabled both divisions of the low reactor vessel water level (Level 3) isolation logic for the shutdown cooling isolation valves RHR-V-8 and RHR-V-9, contrary to station procedures. This issue was entered into the licensee’s corrective action program as Action Request 271826.

This performance deficiency was more than minor because it adversely affected configuration control attribute of the Barrier Integrity Cornerstone objective to

ensure that physical design barriers protect the public from radionuclide releases caused by accidents or events. The senior resident inspector performed the initial significance determination for the finding using the NRC Inspection Manual 0609, Appendix G, "Shutdown Operations Significance Determination Process." Using Checklist 7, "BWR Refueling operations with RCS Level > 23 Feet," the finding required a Phase 2 quantitative assessment because the automatic isolation function of the decay heat removal system (on low vessel level) was not operable. A Region IV senior reactor analyst performed a modified Phase 2 analysis and determined the finding was of very low safety significance. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to use a systematic process when not following the procedural requirements associated with the residual heat removal shutdown cooling system. [H.1(a)]. (Section 4OA2)

B. Licensee-Identified Violations

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and associated corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period at 100 percent power. The plant operated at 100 percent power, with the exception of scheduled reductions in power to support maintenance and testing, for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On November 13, 2012, a winter weather advisory was issued for the area including the potential for freezing fog and icing. The inspectors observed the preparations and planning for the significant winter weather potential. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for safe plant operation and emergency response would be available. The inspectors conducted a site inspection, including various plant structures and systems, to check for maintenance or other apparent deficiencies that could affect system operations during the predicted significant weather. 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. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- November 14, 2012, standby liquid control train B while performing maintenance on standby liquid control train A
- November 27, 2012, condensate storage tanks, 1A and 1B
- November 28, 2012 – December 3, 2012, control room emergency filtration and heating, ventilation and air conditioning systems

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, FSAR, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On December 3-5, 2012, the inspectors performed a complete system alignment inspection of the high pressure core spray system to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors

reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Inspection Tours

a. Inspection Scope

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

- September 24, 2012, Fire Area R-5/1, train A, residual heat removal heat exchanger room
- October 19, 2012, Fire Areas SW-1/1 and SW-2/2, trains A and B, standby service water pump houses
- November 16, 2012, Fire Areas RC-5/1, division 1 125 VDC and 250 VDC battery rooms and equipment rooms
- November 28, 2012, Fire Area R-3, high pressure core spray pump room

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

during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

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

- December 17-19, 2012, emergency diesel generator rooms and corridor

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

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 October 15, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during training. The inspectors assessed the following areas:

- Licensed operator performance
- 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 12, 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 work on control rod drive hydraulic control unit CRD-HCU-1023, residual heat removal system testing and suppression pool letdown.

In addition, the inspectors assessed the operators' adherence to plant procedures, including OI-09, "Operations Standards and Expectations" 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.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- November 28, 2012, Action Request 252200, documenting the failure of control room emergency filtration damper WMA-AD-51A
- December 6, 2012, residual heat removal system review

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

Introduction. The inspectors reviewed a self-revealing Green non-cited violation of Technical Specification 5.4.1.a for failure to provide suitable work instructions for maintenance on control room emergency ventilation system dampers.

Description. On November 11, 2011, the control room unexpectedly received annunciator "CR DAMPER 51A-1 TROUBLE." Investigation by the licensee revealed that the operating linkage for control room emergency filtration damper WMA-AD-51A was bound causing the damper to stick in an intermediate position. The licensee released the hung up operating linkage but the damper remained in the intermediate position. Because damper WMA-AD-51A is required to close to isolate the control room from unfiltered outside air, the operating crew took action to fail and gag the damper in the closed position. On November 22, 2011, the licensee replaced the motor actuator for WMA-AD-51A restoring the component to an operable status. The licensee initiated Action Request 252200 to investigate the failure of WMA-AD-51A.

The licensee's apparent cause evaluation performed for Action Request 252200 determined that the failure of damper WMA-AD-51A was due to improper set up of the

linkage which resulted in a slip at one of the linkage connections. The apparent cause also identified that an inspection of the linkages performed on February 21-22, 2007, under Work Order 01126994, likely misaligned the linkages and subjected the swivels to excessive spring forces causing them to slip over a period of time. The inspectors reviewed the maintenance task outline in Work Order 01126994 and identified that the work instructions did not have appropriate steps to ensure the alignment of damper linkages associated with WMA-AD-51A. The inspectors also reviewed Problem Evaluation Request 298-1187, initiated on September 7, 1998, associated with a failure of a similar damper WEA-AD-51. Corrective Action 1, associated with PER 298-1187, established a 5 year replacement of the motors and swivels for normally energized dampers WMA-AD-51A and WMA-AD-51B. Those preventative maintenance tasks were inappropriately canceled for WMA-AD-51A on September 28, 2007, and thus, the corrective actions for PER 298-1187 were never completely implemented. This was identified as a contributing cause by the licensee.

As interim corrective actions, the licensee visually inspected the dampers identified in the extent of condition as susceptible to an incorrect linkage setup. Long term corrective actions were identified to include creation of a maintenance procedure that covers damper linkage setup and implementation of recurring preventative maintenance tasks for critical ventilation system dampers.

Analysis. The inspectors determined that the failure to provide suitable procedures associated with maintenance of control room emergency ventilation system dampers was a performance deficiency. This performance deficiency was more than minor because it adversely affected the procedure quality attribute of the Barrier Integrity Cornerstone objective to ensure that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding was of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier provided for by the control room. The inspectors determined that this finding did not have a cross-cutting aspect since the cause of the inadequate maintenance procedures was due to a performance deficiency that occurred in 2007 and therefore was not reflective of current licensee performance.

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Contrary to the above, from February 21-22, 2007, the licensee did not have written procedures established, implemented and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Specifically, Section 9.a of Regulatory Guide 1.33, Appendix A, requires, in part, that maintenance affecting safety-related equipment be accomplished in accordance with written procedures. Work Order 01126994 did not provide adequate work instructions to ensure that actuator linkages for control room ventilation air damper WMA-AD-51A were properly aligned. Consequently, these actuator linkages slipped resulting in inoperability of this damper on November 11, 2011. Because the finding is of very low safety significance (Green) and has been entered into

the licensee's corrective action program as Action Request 252200, this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012005-01, "Failure to Provide Maintenance Procedures for Control Room Emergency Ventilation System Dampers."

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 22, 2012, Yellow risk while performing heavy lifts in circulating water pumphouse
- November 2, 2012, Orange risk during planned replacement of service water pump 1B circuit breaker

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 24, 2012, Action Request 272948 documenting a lack of operability justification when performing keep full verifications on emergency core cooling systems
- October 26, 2012, Action Request 273061 documenting degraded lubrication in 4160V circuit breakers
- November 5, 2012, Action Request 273408 documenting the failure to meet Surveillance Requirement 3.7.4.1 for the control room HVAC system

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 FSAR 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 three operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

- .1 Introduction. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a, "Procedures," was identified for the failure to follow Procedure OI-09, "Operations Standards and Expectations," Revision 56, when authorizing work on emergency core cooling system boundary components. Specifically, the licensee failed to understand the technical specification impact when performing emergency core cooling system venting activities.

Description. On October 24, 2012, the inspectors questioned operations staff on why emergency core cooling systems were not declared inoperable while performing technical specification required venting operations. During these venting operations, accessible high point vent valves are opened to verify the system is full of water. The inspectors were concerned that while these vent valves are open, the system was breached such that pressure integrity could no longer be maintained. The inspectors requested to review any engineering calculations that supported system operability. Operations initiated Action Request 272948 to document the inspectors concerns. On December 18, 2012, the inspectors reviewed the engineering evaluation associated with Action Request 272948. In this engineering evaluation the licensee determined that operability of emergency core cooling systems could not be supported during venting

operations since there was no calculation or evaluation that demonstrated the system's ability to perform its safety function while the emergency core cooling systems vent valves were open.

The inspectors reviewed various work authorization procedures and noted that Procedure OI-09, "Operations Standards and Expectation," Step 5.1.1, requires senior reactor operators to authorize work only upon reaching a thorough understanding of the impact on technical specification equipment. The inspectors interviewed various senior reactor operators and determined the staff failed to validate the assumption that the emergency core cooling systems were operable while performing venting operations. Operations staff issued Night Order 1419 to document the need to declare emergency core cooling systems inoperable until all applicable procedures could be updated to include steps to declare the systems inoperable.

Analysis. The failure to understand the operability impacts of emergency core cooling system components while authorizing work was a performance deficiency. This performance deficiency was more than minor because it adversely affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding was of very low safety significance (Green) because the finding did not represent a loss of safety function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, and did not represent an actual loss of function of one or more non technical specification equipment for greater than 24 hours. The inspectors determined the finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to verify the validity of the underlying assumption that the emergency core cooling system was operable while performing venting operations. [H.1(b)]

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Contrary to the above, prior to October 24, 2012, the licensee did not have written procedures established, implemented and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Specifically, Section 1.c of Regulatory Guide 1.33, Appendix A, requires written administrative procedures for equipment control. Procedure OI-09, "Operations Standards and Expectation", Revision 56, Step 5.1.1, requires, in part, that senior reactor operators will authorize work only upon reaching a thorough understanding of its impact. The licensee failed to gain a thorough understanding of the impact of venting operations on technical specification operability for emergency core cooling systems, and failed to declare emergency core cooling systems inoperable while manipulating emergency core cooling system high point vents to perform technical specification required surveillances. The inspectors identified this issue on October 24, 2012 and the licensee initiated Night Order 1419 to inform the senior reactor operators of the requirement to declare emergency core cooling systems

inoperable during venting surveillances. Because this finding is of very low safety significance (Green) and was entered into the licensee's corrective action program as Action Request 272948, the violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012005-02, "Failure to Enter Technical Specification Action Statements When Authorizing Work."

- .2 Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow Procedure SWP-CAP-01, "Corrective Action Program." Specifically, the licensee failed to initiate a condition report upon receiving an operating experience report on a failed circuit breaker due to inadequate lubrication.

Description. On June 4, 2012, residual heat removal pump A circuit breaker RHR-CB-P2A was removed from service to perform preventative maintenance. During the maintenance activity the breaker failed to fully charge following closing. The licensee initiated Action Request 264730 documenting the failure to charge, replaced the failed breaker with a spare, and sent the failed breaker to the vendor for analysis. The vendor was able to repeat the failure and determined the breaker failed to charge due to degraded lubricant on components that operated during the charging sequence. The vendor performed maintenance on the breaker and recommended the licensee change their lubrication frequency from 4 years to 3 years. The vendor informed the licensee of their results, and on October 25, 2012, the licensee initiated Action Request 273061 documenting the vendor's assessment.

On October 26, 2012, operations staff requested a prompt operability determination to determine if other similar breakers were outside the preventative maintenance schedule recommended by the vendor. During the prompt operability assessment, the licensee determined that 22 breakers of the same type as the one that failed during maintenance were currently installed. Of the 22 breakers installed, three were identified to be outside of the vendor recommended lubrication interval. The licensee determined that of these 3 breakers, only the service water pump B circuit breaker SW-CB-P1B could potentially be affected by the lubrication deficiency since this breaker needs to load shed and then automatically reclose during an accident. The licensee subsequently replaced circuit breaker SW-CB-P1B with a spare which had preventative maintenance performed in accordance with the vendor's recommended frequency.

The inspectors reviewed the licensee's prompt operability determination and subsequent follow up actions. The inspectors reviewed Action Request 261640, issued on April 16, 2012 which documented an identical failure of a similar breaker at another nuclear facility during performance of 6 year preventative maintenance on January 6, 2012. Action Request 261640 was coded as an operating experience report and therefore processed through the operating experience staff, effectively bypassing the main control room. The inspectors referred to Procedure SWP-CAP-01, "Corrective Action Program," Revision 24, Step 4.1.4, which states, in part, that station personnel are required to promptly notify supervision and the main control room if a condition is known or suspected to involve equipment operability or equipment functionality. Step 4.1.4 also states the reason for prompt notification is to ensure the extent of condition to

the station is documented. During the disposition of the action request, the licensee documented that the failure had generic implications at Columbia Generating Station, however, the licensee had barriers in place that would prevent such a failure at Columbia Generating Station. The action request dispositioner failed to identify what the barriers were and how they would prevent such a failure. The inspectors determined the failure documented in Action Request 261640 could have affected equipment operability or functionality, and the extent of condition needed to be determined, and therefore the licensee was required to promptly notify supervision and the main control room.

The inspectors interviewed various members of operations, engineering, and the operating experience group and determined the operating experience process was looked at separately from the condition reporting process. In particular, the licensee viewed the operating experience process as a preventative process, while the condition reporting process was viewed as a corrective process. The inspectors determined the licensee did not have clear guidance on when to transition from the operating experience to the corrective action process.

Analysis. The failure to initiate a condition report for a suspected condition adverse to quality was a performance deficiency. The performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding was of very low safety significance (Green) because the finding did not represent a loss of safety function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, and did not represent an actual loss of function of one or more non technical specification equipment for greater than 24 hours. The inspectors determined the performance deficiency had a cross-cutting aspect in the area of problem identification and resolution with an operating experience component because the licensee failed to evaluate and communicate external operating experience to internal stakeholders in a timely fashion [P.2(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with these procedures. Contrary to the above, on April 16, 2012, the licensee did not accomplish activities affecting quality in accordance with procedures. Specifically, licensee Procedure SWP-CAP-01, "Corrective Action Program," Revision 24, Step 4.1.4, requires, in part, the licensee to promptly notify supervision and the main control room if a condition is known to or suspected to involve equipment operability or functionality so the extent of condition can be determined. The licensee did not promptly notify the main control room upon identification that a potential for degraded lubrication in certain safety-related breakers existed. Consequently, the licensee failed to address the extent of condition of degraded lubrication in safety-related circuit breakers until operations staff requested a prompt operability determination on October 26, 2012. The inspectors identified this issue on December 18, 2012, and the licensee subsequently initiated Action Request 276002 to document the inspectors concerns. Because this violation

was of very low safety significance (Green) and it was entered into the licensee's corrective action program as Action Request 276002, this violation is being treated as a non-cited violation, consistent with the Enforcement Policy: NCV 05000397/2012005-03, "Failure to Initiate a Condition Report upon Identification of Degraded Lubrication in Safety-Related Equipment."

1R18 Plant Modifications (71111.18)

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the following modifications:

- Engineering Change 10787, remove a section of the bird screen on the reactor building outside air system intake
- Engineering Change 9013, control room annunciator ring-back modification
- Engineering Change 11109, removal of valves RHR-V-60A/B and RHR-V-75A/B

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 modifications.

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; post-modification 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 plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three samples for 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:

- October 29, 2012, post-maintenance testing of RHR-V-732 following Engineering Change 11109
- November 2, 2012, post-maintenance testing of service water pump 1B following circuit breaker replacement
- November 5, 2012, post-maintenance testing of train B control room emergency chillers following maintenance on service water temperature control valve SW-TCV-11B
- November 26, 2012, post-maintenance testing of FPC-V-157A/B following check valve internals inspection
- December 6, 2012, post-maintenance testing of RHR-V-3B following valve lubrication and inspection
- December 19, 2012, post-maintenance testing of control room emergency chiller CCH-CR-1A following auxiliary oil pump relay replacement
- December 19, 2012, lack of post-maintenance testing following calibration of relay CRD-RLY-62/P1A

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

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

The inspectors evaluated the activities against the technical specifications, the FSAR, 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 seven post-maintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the FSAR, 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.

- October 11, 2012, OSP-ELEC-M702, "Diesel Generator 2 Monthly Operability Test"
- October 31, 2012, TSP-SW-A101, "Service Water Loop A Cooling Coil Heat Load Capacity Test" and TSP-SW-A102, "Service Water Loop B Cooling Coil Heat Load Capacity Test"
- November 22, 2012, OSP-SW/IST-Q701, "Standby Service Water Loop A Operability"
- December 19, 2012, ISP-MS-Q911, "ATWS-RPT-ARI Actuation Reactor Level 2 Channels A and C – CFT/CC"

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

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

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure of the licensee to perform required surveillance testing of the control room heating, ventilation and air conditioning (HVAC) system.

Description. On October 30, 2012, the inspectors reviewed the licensee's procedures for testing of the control room heating, ventilation and air conditioning (HVAC) system. Operability testing requirements of the control room air conditioning system are specified in Limiting Condition for Operation (LCO) 3.7.4, "Control Room Air Conditioning (AC) System." Technical Specification Surveillance Requirement 3.7.4.1 required the licensee to verify each control room AC subsystem has the capability to remove the assumed heat load specified in the safety analysis every 24 months. To meet this surveillance requirement, the licensee performed Procedures TSP-SW-A101, "Service Water Loop A Cooling Coil Heat Load Capacity Test," Revision 2, and TSP-SW-A102, "Service Water Loop B Cooling Coil Heat Load Capacity Test," Revision 2. The inspectors noted that these procedures tested the service water pump house room coolers, PRA-FC-1A and PRA-FC-1B, but did not test any components in the control room HVAC system. The licensee based this test methodology on the programs implemented to meet the recommendations of NRC Generic Letter 89-13, "Service Water System Problems Affecting Safety Related Equipment."

The inspectors expressed concern that the current testing methodology did not adequately demonstrate the ability of the control room HVAC system to perform its safety-related function. The technical specification bases defined a control room HVAC subsystem as consisting of an air filter, two cooling coils (one normal and one emergency), a control room recirculation fan, ductwork, dampers, and instrumentation and controls to provide for control room temperature control. The inspectors determined that under the licensee's current test methodology, degraded conditions that impact the ability of the control room HVAC to remove heat or latent failures associated with these components could go undetected because Procedures TSP-SW-A101 and TSP-SW-A102 only demonstrated the capability of the service water pump house coolers.

On October 31, 2012, the inspectors, along with representatives from the NRC's Office of Nuclear Reactor Regulation, had a telephone conference call with the licensee to discuss the testing currently used to satisfy Technical Specification Surveillance Requirement 3.7.4.1. As a result of that call, the inspector determined that the licensee's current procedures were not sufficient to demonstrate the heat removal capability of the control room HVAC system and could not be used to satisfy the surveillance requirement. Specifically, the use of a program such as that recommended by Generic Letter 89-13 is not an acceptable substitute for specific testing required by technical specifications. The inspector discussed this information with the shift manager and the shift manager declared Surveillance Requirement 3.7.4.1 missed for both trains of control room HVAC and applied Surveillance Requirement 3.0.3. This allowed the licensee to delay declaring the limiting condition for operation not met for a limited period of time following the performance of a risk assessment.

On November 3, 2012, the licensee performed testing of both trains of the control room HVAC system and determined that each train had sufficient capacity to remove the assumed heat in the safety analysis. At the end of the inspection period, the licensee was developing formal testing procedures that would satisfy Technical Specification Surveillance Requirement 3.7.4.1. This issue was entered into the licensee's corrective action program as Action Request 273408.

Analysis. The failure to perform adequate testing of the control room HVAC system was a performance deficiency. This performance deficiency was more than minor because it adversely affected the procedure quality attribute of the Barrier Integrity Cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding was of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier provided for by the control room. The inspectors determined that this finding did not have a cross-cutting aspect since the decision to test a service water pump house cooler in place of the control room HVAC cooler was made at the time of improved standard technical specifications implementation around 1998 and was therefore not reflective of current licensee performance.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant operation of structures, systems, and components. Contrary to the above, from March 28, 1997 to November 3, 2012, the licensee had not identified and performed testing required to demonstrate that structures, systems, and components would perform satisfactorily in service is identified and performed in accordance with written test procedures. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant operation of structures, systems, and components. Specifically, the licensee did not test each control room AC subsystem to assure it has the capability to remove the assumed heat load specified in the safety analysis. The testing performed under Procedures TSP-SW-A101, "Service Water Loop A Cooling Coil Heat Load Capacity Test," Revision 2, and TSP-SW-A102, "Service Water Loop B Cooling Coil Heat Load Capacity Test," Revision 2, used to satisfy Technical Specification Surveillance Requirement 3.7.4.1 was inadequate because it tested the service water pump house coolers, PRA-FC-1A and PRA-FC-1B, but did not test any components in the control room HVAC system. Because this violation was of very low safety significance (Green) and it was entered into the licensee's corrective action program as Action Request 273408, this violation is being treated as a non-cited violation, consistent with the Enforcement Policy: NCV 05000397/2012005-04, "Failure to Perform Adequate Surveillance Testing of the Control Room Air Conditioning System."

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The NSIR headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS accession number ML12284A375 and ML12313A010 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 two samples 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 October 30, 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.

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the third Quarter 2012 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

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

b. Findings

No findings were identified.

.2 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.

.3 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.

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

Substantive Cross-Cutting Issues Trend Review

In the 2011 Annual Assessment letter for Columbia Generating Station dated March 5, 2012 (ADAMs Accession Number ML120610379), the NRC identified a cross-cutting theme in the work practices component of the human performance cross-cutting area. Specifically, in the work practices component, the NRC identified a theme associated with failure to implement human error prevention techniques [H.4(a)].

On June 21, 2012, the licensee notified the NRC that they have observed overall improvement in the area work practices and indicated a readiness for inspection of their corrective actions in response to the substantive cross-cutting issue. Based on the licensee's indication of readiness, 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 reviewed documents and interviewed personnel to determine if the licensee completely and accurately identified and corrected human performance issues in a timely manner commensurate with their significance. Additionally, the inspectors observed various work activities to determine if the use of human error prevention techniques has been institutionalized by the Columbia Generating Station work force. The inspectors focused on the effectiveness of the licensee's corrective actions to address each of the individual inputs into the human performance substantive cross-cutting issue and the root and apparent cause evaluations initiated under the following Action Requests:

- AR 227575, "Management not Focusing on Human Performance Shortfalls"
- AR 248578, "Continued Decline in Operational Human Performance"
- AR 251606, "Three Cross-Cutting Aspects in H.1.a (Later H.4.a)"
- AR 254422, "Persistent Human Performance Errors"

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of July 2012 through December 2012, but since some of the individual contributors to the human performance substantive cross cutting issue pre-dated this period and because the licensee's actions to address these persistent human performance errors had been in effect for some time, some of the inspectors' review considered the period of January 2011 through December 2012.

The inspectors also included issues documented outside of the normal corrective action program, the inspectors reviewed issues documented in system health reports, the licensee management observation program, corrective and elective maintenance backlogs, quality assurance audit/surveillance reports and self-assessment reports. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program to ensure that all human performance issues were accurately captured and corrected. Corrective actions associated with a sample of the issues identified 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

Introduction. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to follow procedures associated with operation of the residual heat removal system shutdown cooling isolation logic. Specifically, the inspectors identified multiple examples where the licensee disabled both divisions of shutdown cooling isolation logic, contrary to station procedures.

Description. On September 19, 2012, the licensee initiated Action Request 270846 which documented that on several occasions during the previous refueling outage, operating crews defeated both channels of the isolation logic associated with shutdown cooling suction valves RHR-V-8 and RHR-V-9. Valves RHR-V-8 and RHR-V-9 are required to fully close within 40 seconds after a low reactor vessel water level isolation signal (Level 3) to terminate a leak path in the shutdown cooling system. The level 3 shutdown cooling isolation logic is required to be operable per the requirements of Limiting Condition for Operation (LCO) 3.3.6.1, "Primary Containment Isolation Instrumentation", Function 5.d which required two channels per trip system while in Mode 3, 4 and 5. This specification is modified by a note that only required one trip system in Modes 4 and 5, provided that shutdown cooling system integrity is maintained. The planned inoperability of the shutdown cooling isolation logic was performed using Procedure SOP-RHR-SDC-BYPASS, "Bypassing RHR Shutdown Cooling Isolation Logic in Mode 4 and 5," Revision 8-10, which contained the following specific sections:

- Section 5.3, "Bypassing Division 1 Shutdown Cooling Level 3 Isolation Logic By Lifting Leads"
- Section 5.4, "Bypassing Division 2 Shutdown Cooling Level 3 Isolation Logic By Lifting Lead"
- Section 5.5, "Bypassing One Channel of RHR Shutdown Cooling Level 3 Isolation Logic Using Valve Disconnect"

On October 1, 2012, the inspectors reviewed Action Request 270846 and noted that no evaluation had been performed of this condition and the licensee had an assigned due

date for action request closure of January 25, 2013. The inspectors reviewed Procedure SOP-RHR-SDC-BYPASS and noted that the procedure only allowed for the bypassing of one division of residual heat removal shutdown cooling isolation logic. The procedure provided specific steps (Step 5.3.4, Step 5.4.4 and Step 5.5.3) which required operators to verify the remaining division of level 3 shutdown cooling isolation logic is operable prior to bypassing the opposite division. Since the intentional disabling of both valves RHR-V-8 and RHR-V-9 would prevent the nuclear steam supply shutoff system from isolating a leak in the shutdown cooling system, the inspectors challenged the licensee if this represented a reportable condition.

The inspectors also noted that the reason for disabling both valves was to perform surveillance and postmodification testing on various reactor protection system components. In some cases, the train that was to be tested by the licensee was the same train that was aligned for the shutdown cooling isolation logic resulting in a potential loss of shutdown cooling. Rather than swap the trains of isolation logic to facilitate testing, the licensee elected to disable the isolation function of both residual heat removal suction valves. This practice of disabling both valves for operational convenience rather than swapping the shutdown cooling isolation logic is contrary to the guidance contained in the Technical Specification Bases for Limiting Condition for Operation 3.0.2. Specifically, the Technical Specification Bases state that:

[The] completion times of the required actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the actions include, but are not limited to, performance of surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering actions for these reasons must be done in a manner that does not compromise safety. Intentional entry into actions should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead.

The licensee evaluated the inspectors' concerns and determined that since no procedural guidance existed for the simultaneous disabling of the isolation function of both RHR-V-8 and RHR-V-9, the practice resulted in a condition that could have prevented the fulfillment of the safety function of systems that are needed to remove residual heat and to mitigate the consequences of an accident and was reportable per the requirements of 10 CFR 50.73(a)(2)(v)(C) and (D). A licensee event report was submitted on November 19, 2012.

At the close of the inspection period, the licensee was evaluating corrective actions necessary to address procedural compliance and operational practice issues. A supplemental licensee event report is planned to document these corrective actions.

Analysis. The inspectors concluded that the failure to follow procedures associated with the bypassing of the shutdown cooling system level 3 isolation logic was a performance deficiency. The performance deficiency was more than minor because it adversely affected the configuration control attribute of the Barrier Integrity Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating

events to prevent undesirable consequences. The senior resident inspector performed the initial significance determination for the finding using the NRC Inspection Manual 0609, Appendix G, "Shutdown Operations Significance Determination Process." Using Checklist 7, "BWR Refueling operations with RCS Level > 23 Feet," the finding required a Phase 2 quantitative assessment because the automatic isolation function of the decay heat removal system (on low vessel level) was not operable. A Region IV senior reactor analyst attempted to perform the Phase 2 screening in accordance with the Appendix G, Attachment 3, "Phase 2 Significance Determination Process Template for BWR during Shutdown." However, this finding was not well suited for this screening process in that the performance deficiency would increase the loss of inventory event frequency and the worksheets did not account for this correction. Therefore, the analyst utilized basic information in the worksheet and performed a modified Phase 2 analysis.

Modified Phase 2: The analyst noted that Licensee Event Report 2012-006-00, "Both Division of Shutdown Cooling Isolation Valves Made Inoperable," dated November 19, 2012, specified that the reactor vessel water level was always 23 feet above the top of the reactor vessel flange when valves RHR-V-8 and RHR-V-9 were deactivated in the open position.

The finding involved a potential intersystem loss of coolant accident. Specifically, if residual heat removal (RHR) valves RHR-V-8 and RHR-V-9 were both de-energized open (unable to automatically close), and a Group 6 isolation were received, the RHR discharge valve (RHR-V-53A/B) would automatically close and the train relief valve on the pump discharge (RHR-V-25A/B, discharge to the suppression pool) would likely open. This would set up a drain path from the reactor coolant system to the suppression pool. The relief valve line is small (about 2 inches in diameter) and operators would have a relatively long period to respond to the event (many hours). If reactor vessel water level proceeded to decrease all the way to reactor vessel Level 3, well below the top of the flange, residual heat removal valves V-8 and V-9 would not auto-close. This was a "condition" finding (versus a precursor finding).

The analyst used Appendix G, Attachment 3, Worksheet 3, "Worksheet for a BWR Plant – Loss of Inventory in POS 3 (Cavity Flooded)," to complete the remainder of the assessment.

To evaluate this finding, the analyst relied on the following influential assumptions:

- The residents reported that the total time that the licensee de-energized open valves RHR-V-8 and RHR-V-9 was approximately 1,440 minutes. This is an exposure period of 1 day.
- If the above scenario occurred, operators would receive multiple alarms at different points in the drain down. Each alarm would notify the operators of the on-going loss of inventory event. This would constitute multiple alerts to operators and at different times. In addition, operators and personnel on the refueling floor would notice the dropping water level in the reactor cavity. These individuals were very likely to report the problem to the control room.

- Operators could take mitigating action within a short time. This could be accomplished in a few minutes by securing the residual heat removal pump(s). Alternatively, operators could clear the Group 6 isolation and open the residual heat removal discharge valves. Another option might include re-energizing valves RHR-V-8 and RHR-V-9 so that one or both of these valves could be closed. These actions may take a little longer to complete, but are clearly feasible and easily accomplished. Based on the above, the analyst determined that operators would have more than 50 times the required time to take the mitigating action. Since this is much greater than the 2 times the estimated action time (value used in the appendix), the analyst assumed that the Group 6 isolation function could be manually accomplished.
- In lieu of the sequence LOI-MINJ, the analyst assumed that the sequence was LOI-MINJ-RHRREC. Otherwise, the sequence would always generate an unrealistically large core damage frequency. This is because the sequence improperly assumed that the failure to initiate injection (after leak isolation) would always result in core damage. This is not the case because residual heat removal can be recovered (without injection) in the vast majority of cases.
- Time to boiling, following the Group 6 isolation, was much more than two hours.
- The licensee had two low pressure emergency core cooling injection subsystems available for injection.
- Since a spurious or accidental Group 6 isolation could initiate the event, the analyst conservatively assumed an initiating event frequency of 1.0 per year. With a 1 day exposure period, the initiating event likelihood was $1.0/365 = 2.7E-3$.

Based on the above, the limiting change to the core damage frequency was $5.0E-9$ /year. Therefore, this finding was of very low safety significance (Green). Since the change to the core damage frequency was less than $E-7$, the large early release frequency was not significantly affected by this finding.

The dominant core damage sequences included the failure of operators to recognize the leak and to take actions to stop it. The fact that the event would progress in a very slow manner (and operators had multiple prompts and visual indicators) helped to minimize the significance.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to use a systematic process when not following the procedural requirements associated with the residual heat removal shutdown cooling system [H.1(a)].

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented and maintained as recommended in Regulatory Guide

1.33, Revision 2, Appendix A, dated February 1978. Contrary to the above, on 29 occasions between June 11, 2011, and September 14, 2011, the licensee did not have written procedures established, implemented and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Specifically, Section 3.c of Regulatory Guide 1.33, Appendix A, requires written procedures for operation of the shutdown cooling system. Procedure SOP-RHR-SDC-BYPASS, "Bypassing RHR Shutdown Cooling Isolation Logic in Mode 4 and 5", Revision 8-10, contains the following requirements:

- Step 5.3.4, Verify the Division 2 channel of level 3 SDC isolation logic is operable.
- Step 5.4.4, Verify the Division 1 channel of level 3 SDC isolation logic is operable.
- Step 5.5.3, Verify the level 3 SDC isolation logic channel not being bypassed is operable.

The licensee bypassed one division of shutdown cooling level 3 isolation logic without first verifying the operability of the opposite division of isolation logic in accordance with Steps 5.3.4, 5.4.4 or 5.5.3 of Procedure SOP-RHR-SDC-BYPASS. Because this finding is of very low safety significance (Green) and was entered into the licensee's corrective action program as Action Request 271826, the violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012005-05, "Failure to Follow Shutdown Cooling Isolation Logic Bypass Procedures Results in Loss of Safety Function."

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors reviewed the following corrective action items:

- Action Request 270326, documenting RHR-P-2B in the "Alert" range for inservice testing
- Action Request 273937, documenting the identification of a degrading upper seal pressure trend for reactor recirculation pump 1A

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 2012-003-00, Secondary Containment Pressure Exceeded During Plant Maintenance

This licensee event report documents a pressure excursion in the secondary containment system due to a trip of the in-service reactor building intake and exhaust fans. The trip occurred during maintenance on the standby gas treatment system. The licensee failed to recognize an interconnection between the standby gas treatment system and the in-service reactor building ventilation train. See Section 1R19 of NRC Inspection Report 05000397/2012004 for a discussion of a self revealing non-cited violation associated with this issue. The inspectors completed a review of the licensee event report and did not identify any other violations of regulatory requirements or findings associated with this event. This licensee event report is closed.

.2 (Closed) Licensee Event Report 2012-005-00, Violation of Technical Specifications Due to the Failure to Enter the Appropriate Technical Specification

On August 1, 2012, during planned thermography of safety-related 480V motor control centers, the licensee discovered a power cable for the A phase division 1 essential switch gear room cooler disconnect that was 83 degrees Fahrenheit (F) hotter than the B and C phases and required immediate repair. During review of the licensee's repair plan, the inspectors identified that an inappropriate technical specification action statement would be entered for repairs that removed power from WMA-FN-53A. Specifically, the licensee planned to enter Technical Specification 3.7.1, "Service Water," Condition B, and not the applicable actions statements for all equipment supported by WMA-FN-53A. Entry into the supported equipment action statements would be necessary since there is no limiting condition for operation for WMA-FN-53A. This issue was entered into the licensee's corrective action program as Action Request 268099 and during the extent of condition review, the licensee identified additional occurrences where the service water technical specification was inappropriately applied and resulted in violations of the plant's technical specifications. The inspectors reviewed the licensee event reports associated with this event and determined that the reports adequately documented the summary of the event including the potential safety consequences and corrective actions required to address the procedural inadequacies. The performance deficiency involving procedural inadequacies that allowed operators to enter the wrong technical specification action statement is documented as non-cited violation 05000397/2012004-03. The inspectors determined that an additional licensee identified non-cited violation occurred which is documented in Section 4OA7 of this report. This licensee event report is closed.

40A5 Other Activities

- .1 (Closed) NRC Temporary Instruction 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 05000397/2010005; 2011002; 2011003; 2012003 the inspectors completed activities associated with TI 2515/177.

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

a. Inspection Scope

Inspectors verified that licensee's following walkdown packages contained the elements as specified in the NEI 12-07 Walkdown Guidance document.

- Work Order 02027308, Task 05; Flooding Walkdown Fukushima Project, DG Building Flooding Inspection
- Work Order 02027308, Task 09; Flooding Walkdown Fukushima Project , Inside the Protected Area Flooding Walkdown
- Work Order 02027308, Task 12; Flooding Walkdown Fukushima Project, Service Water Pumphouse 1B Flooding Walkdown

The inspectors accompanied the licensee on their walkdown of the emergency diesel generators rooms 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 SSC 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 walkdowns of the standby service water pump house 1B and of general areas inside the protected area 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 SSC 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

No findings were identified.

.3 (Closed) NRC Temporary Instruction 2515/188 – Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns

a. Inspection Scope

The inspectors accompanied the licensee on the following seismic walkdowns:

- August 7-8, 2012, Work Order 02027312, Task 01, Reactor Building 522' Elevation including seismic walkdown equipment list (SWEL) items electrical instrument Rack E-IR-68, fuel pool cooling flow control Valve FPV-FCV-1, fuel pool cooling heat Exchangers FPC-HX-1A and FPC-HX-1B, and fuel pool cooling Pumps FPC-P-1A and FPC-P-1B
- September 12, 2012, Work Order 02028165, Task 09, Reactor Building 421' and 501' Elevations including SWEL items residual heat removal keep fill pump RHR-P-3, residual heat removal valves RHR-V-16B, RHR-V-17B and RHR-V-42B
- September 17, 2012, Work Order 02028161, Task 03, Reactor Building 421' Elevation including SWEL items reactor core isolation cooling pressure switches RCIC-PS-9A and RCIC-PS-9B, reactor core isolation cooling pressure pumps RCIC-P-1 and RCIC-P-2, and reactor core isolation cooling heat exchanger RCIC-HX-1

The inspectors independently performed the following seismic walkdowns:

- October 17, 2012, diesel generator building, Division 3 (High Pressure Core Spray) emergency diesel generator and switchgear room including SWEL items diesel engine for high pressure core spray system DG-ENG-1C, high pressure core spray engine and generator 480V power panel E-CP-DG/CP3, high pressure core spray diesel engine control panel E-CP-DG/EP3, and Division 3 125VDC battery HPCS-B1-DG3
- November 1, 2012, Radwaste Building 525' Elevation, including SWEL items control room emergency chillers CCH-CR-1A and CCH-CR-1B

For each walkdown the inspectors verified that the licensee confirmed that the following seismic features associated with SWEL items 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
- SSCs 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, 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

On January 3, 2013, the inspectors presented the inspection results to Mr. W. Hettel, Vice President, 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 violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as a non-cited violation.

- .1 Technical Specification 3.8.7 "Distribution Systems - Operating", requires, in part, that the division 1 and division 2 AC electrical power distribution subsystems be operable in Modes 1, 2 and 3. Technical Specification 3.8.7, Condition A, requires that when the division 1 or 2 AC electrical power distribution subsystem is inoperable, action is taken to restore the division 1 and 2 AC electrical power distribution subsystems to operable status within 8 hours. Failure to meet Technical Specification 3.8.7, Condition A, requires entry into Technical Specification 3.8.7, Condition C. Required Action C.1 requires the unit be placed in Mode 3 within an additional 12 hours. Contrary to the above, on November 24, 2009, August 4, 2010, and September 1, 2010, the division 1 125 V AC power distribution room cooler RRA-FN-11 was inoperable for greater than 20 hours rendering the supported division 1 125 V AC power distribution subsystem inoperable. Additionally, on April 26, 2010, the division 2 125 V AC distribution room cooler RRA-FN-10 was inoperable for 20.0 hours rendering the supported division 2 125 V AC power distribution subsystem inoperable. In each instance action was not taken to place Columbia Generating Station in Mode 3 as required by Technical Specification 3.8.7, Required Action C.1.

Additionally, Technical Specification 3.8.7 "Distribution Systems - Operating", requires, in part, that the division 1 DC electrical power distribution subsystems be operable in Modes 1, 2 and 3. Technical Specification 3.8.7 Condition D requires that when the division 1 250 V DC electrical power distribution subsystem is inoperable, the licensee to declare the supported features inoperable immediately. On September 1, 2010, division 1 250 V DC power distribution system room cooler RRA-FN-12 was inoperable which requires the licensee to declare the reactor water cleanup system outboard isolation valve RWCU-V-4 inoperable. Valve RWCU-V-4 is a primary containment isolation valve. When this valve is inoperable, Technical Specification 3.6.1.3 Condition A, requires the licensee to isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 4 hours. Failure to meet Technical Specification

3.6.1.3, Condition A, requires entry into Technical Specification 3.6.1.3, Condition E. Required Action E.1 requires the unit be placed in Mode 3 within an additional 12 hours. Contrary to the above, on September 1, 2010, RRA-FN-12 was inoperable for 18.2 hours, rendering the supported division 1 250 V DC power distribution subsystem and RWCU-V-4 inoperable and action was not taken to place Columbia Generating Station in Mode 3 as required by Technical Specification 3.6.1.3 Required Action E.1.

This finding was identified by the licensee and entered into the corrective action program as Action Request 268099. This finding was evaluated by a senior reactor analyst and determined to be of very low safety significance.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

B. Adami, Manager, Technical Services
V. Bhardwaj, Systems Engineer Manager, Engineering
A. Black, General Manager, Operations
D. Brown, Planning, Scheduling and Outage Manager
S. Brown, Manager, Operations
Z. Dunham, Supervisor, Licensing
E. Dumlao, System Engineer
R. Garcia, Licensing Engineer
D. Gregoire, Manager, Regulatory Affairs
M. Hedges, Principal Engineer, Licensing
W. Hettel, Vice President, Operations
A. Javorik, Vice President, Engineering
C. King, Assistant Plant General Manager
B. MacKissock, Plant General Manager
B. Sawatzke, Chief Nuclear Officer
R. Schuetz, Manager, Maintenance
C. Sonoda, Licensing Engineer, Regulatory Affairs

NRC Personnel

G. Replogle, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened and Closed

05000397-2012-01	NCV	Failure to Provide Maintenance Procedures for Control Room Emergency Ventilation System Dampers (Section 1R12)
05000397-2012-02	NCV	Failure to Enter Correct Technical Specification Action Statements When Authorizing Work (Section 1R15)
05000397-2012-03	NCV	Failure to Initiate a Condition Report upon Identification of Degraded Lubrication in Safety-Related Equipment (Section 1R15)
05000397-2012-04	NCV	Failure to Perform Adequate Surveillance Testing of the Control Room Air Conditioning System (Section 1R22)
05000397-2012-05	NCV	Failure to Follow Shutdown Cooling Isolation Logic Bypass Procedures Results in Loss of Safety Function (Section 4OA2)

Closed

05000397-2012-003-00	LER	Secondary Containment Pressure Exceeded During Plant Maintenance (Section 4OA3)
05000307-2012-005-00	LER	Violation of Technical Specifications Due to the Failure to Enter the Appropriate Technical Specification (Section 4OA3)
NRC TI 2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01) (Section 4OA5)
NRC TI 2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5)
NRC TI 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

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ABN-HVAC	HVAC Trouble	10
SOP- COLDWEATHER- OPS	Cold Weather Operations	24

ACTION REQUESTS

257188	257366	272697	273945	274357
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Section 1R04: Equipment Alignment

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
02-02C41-05	Standby Liquid Control Sys.	3
M520	Flow Diagram HPCS and LPCS Systems Reactor Building	99
M522	Flow Diagram Standby Liquid Control System Reactor Building	37
M527-1	Flow Diagram Condensate Supply System Reactor, Turbine Gen., & Radwaste Buildings, Radwaste/Reactor Building corridor, & Yard	101

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OSP-SLC-B703	SLC Pump Suction Flow Verification	8
SOP-ELEC- BKR-OPS	AC Electrical Breaker Racking	9
SOP-HPCS-LU	HPCS Valve and Breaker Lineup	1
SOP-RHR-LU	RHR System Valve and Breaker Lineup	2
SOP-RPS-OPS	Reactor Protection System Protection	7
SOP-SLC- INJECTION-QC	SLC RPV Injection – Quick Card	3
SOP-SLC-LU	SLC System Valve and Breaker Lineup	0

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CMR 6409	ME-02-90-12 Rev 002	0
EC 11277	RHR-P-2B Capability Evaluation as of 9/10/2012	September 21, 2012
ME-02-90-12	Pressure Drop Verification for HPCS System	2
NUREG/CR- 3786	A Review of Regulatory Requirements Governing Control Room Habitability Systems	August 1984
Spec 21A9342AR	Standby Liquid Control System Pump	3
TM-2126	Control Room Habitability at Design Basis Summer Conditions	0

WORK ORDERS

01078293 01196729

ACTION REQUESTS

187705	213991	254339	254350	254469
255019	255790	256236	256393	257579

258434	258538	258754	259425	260410
263281	265062	265141	265196	268590
268898	269114	269248	269289	270326
272076	272309	272312	273608	274200
274518	274635	274646	274677	274907
275250				

Section 1R05: Fire Protection

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PFP-RB-422	Reactor 422	4
PFP-RB-548	Reactor 548	3
PFP-MN-XFMR- YD-MISC	MN XFMR YD MISC BLDGS	4
PFP-RW-467	Radwaste 467	4

ACTION REQUESTS

271184

Section 1R06: Flood Protection Measures

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ME-02-02-40	Calculation for PFSS Flooding Analysis-Diesel Generator Building	0

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ABN-FLOODING	Flooding	11

Section 1R11: Licensed Operator Requalification Program

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
LR002134	Cycle 12-5 Scenario	0

Section 1R12: Maintenance Effectiveness

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SYS-4-23	Maintenance Rule Structural Baseline Inspections	0
OSP-RHR/IST-Q704	RHR Loop C Operability Test	29
OSP-RHR/IST-Q702	RHR Loop A Operability Test	36

ACTION REQUESTS

00229635	00230840	00230936	00230938	00230945
00232472	00232602	00232688	00232848	00233446
00233492	00233625	00233659	00233992	00234127
00234381	00234591	00234860	00234861	00235045
00235057	00235331	00235623	00237120	00237124
00237187	00237196	00237222	00237227	00237331
00237912	00238010	00238203	00238276	00238361
00240491	00240560	00240826	00240870	00240929
00240930	00241061	00241652	00242060	00242070
00242143	00242383	00242525	00242751	00242754
00244071	00244531	00246912	00246920	00247400
00247424	00248222	00248419	00249281	00249959
00252200	00252403	00253855	00254765	00260342

00260515	00261113	00261152	00262356	00263835
00265076	00265078	00266643	00266822	00267275
00267601	00268252	00269776	00270326	00272377
00222796	00179850	00054484	261544	266974
275861				

WORK ORDERS

01015333	01126994
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Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
1.3.76	Integrated Risk Management	35
10.19.5	Circulating Water Pump Overhaul	14
10.4.12	Crane, Hoist, Lifting Device and Riffing Program Control	30

WORK ORDERS

020003450	02032841
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Section 1R15: Operability Evaluations

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PPM 1.3.66	Operability and Functionality Evaluation	24-25
PPM 8.3.171	A Loop SW Hx Performance Data Collection	1
PPM 8.3.172	B Loop SW Hx Performance Data Collection	1
OI-9	Operations Standards and Expectation	56
OSP-RCIC-M101	RCIC Fill, Flow Controller, and Valve Lineup Verification	1-9
OSP-HPCS-M101	HPCS Fill Verification	1-7
OSP-LPCS-M101	LPCS Fill Verification	1-7
OSP-RHR-M101	RHR A Fill Verification	1-9
OSP-RHR-M102	RHR B Fill Verification	1-9
OSP-RHR-M103	RHR C Fill Verification	1-6

ACTION REQUESTS

255583	265297	272948	273408	273795
273822	274211			

WORK ORDERS

02033132

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ASME PTC 19.1	Test Uncertainty	1998
EC 11364	Control Room HVAC Missed Surveillance SR 3.7.4.1	November 1, 2012

Section 1R18: Plant Modifications

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M521-2	RHR Loop B Flow Diagram	

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EC 9013	Modify Annunciator Ring Back Horns in MCR	0-6
EC 10787	Remove a Section of the Bird Screen on the ROA System Intake	0
EC 11109	Deactivate RHR Sample Valve RHR-V-60A and 75A Removal of RHR-V-60B and RHR-V-75B	0

ACTION REQUESTS

270422	270755	271921	273137	273316
273591				

WORK ORDERS

02028767

Section 1R19: Post-Maintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
10.25.13A	4.16KV Vacuum Breaker Maintenance with Stored Energy Mechanism	14
OSP-CCH/IST-M702	Control Room Emergency Chiller System B Operability	29
OSP-RHR/IST-Q702	RHR Loop B Operability Test	41
SOP-SW-START	Standby Service Water System Start	4
SWP-TST-01	Post Maintenance Testing Program	14
OI-48	Operability Testing Determination	1
10.25.207	Testing and Setting Agastat 7000 Series and Agastat ETR Series Time Delay Relays	5

ACTION REQUESTS

273061 273137 274539 275650

WORK ORDERS

02019937 02032841 01113340 02019441 02025452
02026316 02034710

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
PPM 4.10.2.5	Control Room High Temperature	4
OSP-ELEC-M702	Diesel Generator 2-Monthly Operability Test	57
OSP-ELEC-M102	DO-TK-3B Operability Test	3
OPS-ELEC-W101	Offsite Station Power Alignment Check	21
OSP-SW/IST-Q701	Standby Service Water Loop A Operability	24

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SOP-ELEC- 4160V-OPS	4160 Volt AC Electrical Power Distribution System Operation	9
TSP-SW-A101	Service Water Loop A Cooling Coil Heat Load Capacity Test	0-2
TSP-SW-A102	Service Water Loop B Cooling Coil Heat Load Capacity Test	0-2
ISP-MS-Q911	ATWS-RPT-ARI Actuation Reactor Level 2 Channels A and C – CFT/CC	6

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
TM-2111	Thermal Performance Testing of Air-to-Water Heat Exchangers in the WNP-2 SW System	0

ACTION REQUESTS

273408 274508

WORK ORDERS

02033132 02026280 02026301 02033133

Section 1EP4: Emergency Action Level and Emergency Plan Changes

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PPM 13.1.1	Classifying the Emergency	42/001 and 42/002
PPM 13.1.1A	Classifying the Emergency – Technical Bases	25/001

Section 1EP6: Drill Evaluation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
PPM 5.1.1	RPV Control	19

Section 1EP6: Drill Evaluation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
PPM 5.2.1	Primary Containment Control	20
PPM 13.1.1	Classifying the Emergency	41
PPM 13.1.1A	Classifying the Emergency – Technical Bases	25
PPM 13.10.1	Control Room Operations and Shift Manager Duties	34
PPM 13.14.8	Drill and Exercise Program	17

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ANSI/ANS-3.5-2009	Nuclear Power Plant Simulators for Use in Operator Training and Examination	September 4, 2009
Regulatory Guide 1.149	Nuclear Power Plant Simulation Facilities for Use in Operator Training, License Examinations, and Applicant Experience Requirements	4

ACTION REQUESTS

273321 273322 273479 273526

Section 40A1: Performance Indicator Verification

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
MSPI-01-BD-0001	Mitigating System Performance Index (MSPI) Basis Documents	13
NEI 99-02	Regulatory Assessment Performance Indicator Guidelines	6

ACTION REQUESTS

255503 260673 260908 263384 264391
265821 266993 267130 267637 270867

273518 275382 275401 275611 275632

Section 40A2: Identification and Resolution of Problems

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ABN-CR-EVAC	Control Room Evacuation and Remote Cooldown	25
OI-09	Operations Standards and Expectation	55
OSP-INST-B701	Remote Shutdown Panel Operability	16
OSP-RHR/IST-Q704	RHR Loop C Operability Test	29
OSP-RHR/IST-Q702	RHR Loop A Operability Test	36
PPM 1.3.66	Operability and Functionality Evaluation	24
PPM 10.1.13	Foreign Material Controls for Systems and Components	24
PPM 1.5.13	Preventative Maintenance Optimization Living Program	13
PPM 1.5.13	Preventative Maintenance Optimization Living Program	27
SOP-RHR-SDC-BYPASS	Bypassing RHR Shutdown Cooling Isolation Logic in Mode 4 and 5	8-10

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
3E084	Reactor Recirculation System Miscellaneous Instruments Sheet 1	10
D-14182	Seal System Schematic	H
M525-1	Flow Diagram Closed Cooling Water System Reactor Building	84
RRC-1336-1	RRC-P-1A Seal Leak Detection to EDR	9

ACTION REQUESTS

227575	245507	248171	273937	274642
273817	248226	251606	251613	259217
242383	250473	255208	259653	259939

242500	244710	250473	274642	261388
254422	258542	264204	265072	037183
267538	267770	268559	268633	268761
268841	269022	269247	269563	270029
270846	271826	272681	272732	273747

WORK ORDERS

01111490	01194973	02016751
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MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
TM-2097	Basis for removal of the RHR Shutdown Cooling Suction Flow Rate – High Isolation Function from Improved Technical Specifications	September 28, 1995

Section 40A3: Event Follow-Up

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CDM-01	Cause Determination Manual	9

ACTION REQUESTS

267373	268099
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Section 40A5: Other Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
10.2.53	Scaffolding	39-40
10.2.222	Seismic Storage Requirements for Transient Equipment	1

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
A511	Roof Plan	18
A515	Safety-Related Building Roof Plans and Sections	15
A526	Diesel Generator Building Exterior Wall Sections	11
A570	Safety-Related Building Roof Plans and Sections	7
BLFM1	CGS Energy Northwest Facility Map Buildings	1
C505	Civil Overall Site & Vicinity Plan	B
CVI 02-02E22-07	Battery Rack for Lister Diesel (Detail)	1
CVI 250-03,393,1	Penetration Seal Control Room G205 el 431ft in B Detail	2
CVI 250-03,250,1	Penetration Seal Control Room G204 el 431ft in B Detail	1
M200 Sh 113	Residual Heat Removal System	9
M512-4	Flow Diagram Diesel Oil & Miscellaneous Systems Diesel Generator Building	10
M584	General Arrangement — Standby Service Water Pump Houses Sections (Figure 1.2-20)	9
M587	General Arrangement Plan & Section Diesel Generator Building	35
RCIC-656-5.8	Suction from Suppression Pool to RCIC Pump RCIC-P-1	17
RCIC-659-1.2	RCIC Pump to RCIC Vessel	11
RHR-899-20.22	RHR Loop "B" Heat Exch to RPV	13
S514	Structural Standby Service Water Pump House 1A & 1B Fdn. Plan & Sections	10
S515-1	Structural Standby Service Water Pump House 1A & 1B Plan at Elev. 441'-0" & Roof Plan	29
S771	Structural Reactor Building Equipment Foundations Sh. 1	15
S772	Structural Reactor Building Equipment Foundations Sh. 2	48
S519	Structural Standby Service Water Pump House Penetration Schedules	8
S852	Structural Diesel Generator Building Roof Plan & Sections	19

ACTION REQUESTS

268406	269186	270927	270931	270988
270992	271009	271133	271135	271184
271216	271325	271312	271328	271348
271349	272594	272596		

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
EC 7640	Permanent Non-Intrusive RHR-HX-1A and RHR-HX-1B Thermal Performance Test Equipment Configuration Control	0

Section 40A7: Licensee-Identified Violations

ACTION REQUESTS

268099