

Columbia Generating Station

4Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Sep 21, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Develop Preventive Maintenance Schedule for Safety-Related 480V Starter Coils

Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to implement preventive maintenance schedules for safety-related 480V starter coils. On June 16, 2012, fuel pool cooling pump FPC-P-1A unexpectedly stopped. Subsequent review determined that the loss of fuel pool cooling pump FPC-P-1A was due to no existing preventive maintenance requirement to replace safety-related critical starter coils that are either continuously energized or have a high duty cycle. As corrective action, the licensee implemented a preventive maintenance task to replace high duty cycle starter coils every 15 years and low duty cycle starter coils every 25 years. This issue was entered into the licensee's corrective action program as Action Request 265422.

The finding was more than minor because it affected the structures, systems, and components performance attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) 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 this finding to be of very low safety significance (Green) because the finding did not adversely affect decay heat removal capabilities from the spent fuel pool causing the pool temperature to exceed the maximum analyzed temperature limit specified in the site-specific licensing basis. The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to thoroughly evaluate and implement changes to the preventive maintenance schedule for 480V switchgear in response to industry operating experience [P.2(a)] (Section 1R12).

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Mar 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update Combustible Loading Calculation

Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.d, "Procedures," for the licensee's failure to implement Procedure PPM 1.3.10C, "Control of Transient Combustibles," Revision 13, which required the reactor building combustible loading calculation be updated when plastic tubing was added to all hydraulic control units. The inspectors identified this issue during a plant walkdown of the reactor building. When identified by the inspectors, the licensee promptly removed all of the plastic tubing and performed the required calculations which determined the margin from a low fire area hazard to a high fire hazard area was reduced by approximately 2 percent. At the conclusion of the inspection period the fire protection engineering group had not allowed reinstallation of the material pending an evaluation to determine an alternative low combustible material. This issue was entered into the licensee's corrective action program as Action Request 255802.

The failure to implement a fire protection procedure was a performance deficiency. The finding was more than minor because it affected the protection against external factors (fire) attribute of the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during at-power operations. Using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the performance deficiency affected the fire protection defense-in-depth strategies involving administrative controls. The inspectors referred to Inspection Manual Chapter 0609, Appendix F, "Fire Protection

Significance Process,” and Inspection Manual Chapters 0609, Appendix F, Attachments 1 and 2, and determined the combustible material represented a low degradation rating against the combustible controls program because the materials would not result in ignition of a fire from exiting sources of heat or electrical energy. Therefore, the finding was determined to be of very low safety significance (Green). The inspectors determined the finding had a cross-cutting aspect in the area of human performance with a work control component because the licensee failed to coordinate work activities by incorporating actions to address the impact of the work on different job activities and the need to coordinate and communicate between different departments. Specifically, the licensee failed to produce a work document that documented the need to install the tubing on the hydraulic control units. This oversight prevented the fire protection engineering group from evaluating the inclusion of the combustibles in the combustible loading calculation [H.3(b)] (Section 1R05).

Inspection Report# : [2012002](#) (pdf)

Mitigating Systems

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Enter Correct Technical Specification Action Statements When Authorizing Work

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)

Inspection Report# : [2012005](#) (pdf)

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Initiate a Condition Report upon Identification of Degraded Lubrication in Safety-Related Equipment

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)

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Sep 21, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Enter Applicable LCO for Offsite Power

Green. The inspectors identified a non-cited violation of Technical Specification 3.8.1, "AC Sources – Operating," for the licensee's failure to enter and take required actions contained in Technical Specification 3.8.1, Condition A, when removing startup transformer feeder breakers from service for planned maintenance activities. Upon identification the licensee issued Night Order 1411 which documented that if the startup transformer is unable to supply all safety-related busses then the startup transformer offsite power source should be considered inoperable. The licensee entered this issue into the corrective action program as Action Request AR 271413.

This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the availability 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 performance deficiency 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 that this finding had a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure that work packages were complete, accurate, and up-to-date. Specifically, the licensee failed to specify the potential technical specification surveillance requirement impacts when authorizing maintenance on startup transformer feeder breakers [H.2(c)] (Section 1R04).

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Sep 21, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain Adequate Procedural Guidance for critical Switchgear Ventilation Systems

Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to maintain adequate procedures associated with critical switchgear ventilation systems. Specifically, licensee Procedure ABN-HVAC, "HVAC Trouble," Revision 10, incorrectly directs entry into Technical Specification 3.7.1, "Standby Service Water (SW) System and Ultimate Heat Sink (UHS)," Condition B, for periods when critical switch gear fans were out of service. As corrective action, the licensee changed the procedures to reflect the correct technical specification action statements that should be entered when critical switchgear ventilation systems are taken out of service. This issue was entered into the licensee's corrective action program as Action Request AR 268099.

This performance deficiency was more than minor because it adversely affected the procedural quality attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined this finding to be of very low safety significance (Green) because it was not a deficiency or qualification deficiency, did not represent a

loss of system and/or function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time or two separate safety systems out of service for greater than its technical specification allowed outage time, and the finding did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The inspectors did not assign a cross-cutting aspect to this finding because the inadequate procedural guidance for critical switchgear ventilation systems was made in 2009 and is not reflective of current performance (Section 1R15).

Inspection Report# : [2012004](#) (pdf)

Significance:  Jun 29, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Analyze Post Fire Safe Shutdown Circuitry for Isolation for a Control Room Fire

Green. The inspectors identified a non-cited violation for the failure to ensure that material, parts, and equipment specified met or exceeded the design criteria as required by License Condition 2.C.14, "Fire protection Program (Generic Letter 86-10)." Specifically, prior to implementing engineering change EC 9123, the licensee failed to analyze for all possible failure modes of fire induced circuit failures for transducers installed for ensuring electrical isolation in the event of a fire in the control room for post fire safe shutdown standby service water pump SW-P-1B, residual heat removal pump RHR-P-2B, and circuit breaker E-CB-B/8 as required by FSAR Appendix F, Table F.3-1.

The failure to analyze a modification to post fire safe shutdown circuitry for all possible modes of fire induced circuit failures was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this deficiency using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process." The performance deficiency affected the fire protection defense-in depth strategies involving post-fire safe shutdown systems.

This finding was evaluated using the process in Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," and was determined to be of very low safety significance. The finding was assigned a low degradation rating because the capability to achieve safe shutdown in the event of a control room fire would be minimally impacted by the failure to analyze the control circuitry for equipment required for post fire safe shutdown. This was based on the licensee verifying through bench testing that the component in question does provide adequate electrical isolation. Because this finding had a low degradation rating, it screened as having very low safety significance (Green). The performance deficiency had a cross-cutting aspect in the area of human performance associated with decision making because the licensee did not make risk-significant decisions using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety was maintained and failed to implement the roles and authorities as designed for risk-significant decisions [H.1(a)]. (Section 1R05.06.b)

Inspection Report# : [2012007](#) (pdf)

Significance:  Jun 22, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Operability Associated with Residual Heat Removal Pump B

Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of the licensee to perform a required operability determination for a degraded condition associated with residual heat removal pump B. On March 25, 2012, the licensee performed Procedure OSP-RHR/IST-Q703, "RHR Loop B Operability Test," Revision 34, and recorded a pump discharge pressure that exceeded the acceptance criteria by 0.03 psig. The operating crew determined that no immediate operability determination was required by Procedure PPM 1.3.66, "Operability and Functionality Evaluation," Revision 20, since pump performance was stable and satisfactory. Subsequent review by the inspectors revealed that the assumption that pump performance was stable and satisfactory was not correct and an operability determination

was required. Specifically, pump discharge pressure dropped below the technical specification surveillance requirement acceptance criteria at several points after the licensee had recorded their data and the pump had exhibited a declining trend in performance since its last surveillance. This issue was entered into the licensee's corrective action program as Action Request AR 266371.

This performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. 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 conservative assumptions when evaluating Action Request AR 260478 that documented low margin for residual heat removal pump B. Specifically, the shift manager failed to challenge the non-conservative assumption that pump flow was stable and satisfactory [H.1(b)]. (Section 1R15).

Inspection Report# : [2012003](#) (pdf)

Significance: G Jun 22, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Adequate Postmaintenance Tests for Replacement of Division 3 Safety Related Batteries

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 a required postmaintenance test of the division 3 safety-related batteries prior to system restoration. On May 22, 2012, the licensee replaced the division 3 safety-related battery HPCS-B1-DG3 under Work Order 02000618. The resident inspectors reviewed the work orders associated with the replacement of battery HPCS-B1-DG3 and identified that the licensee failed to incorporate either a modified performance discharge test or a battery service test into their postmaintenance testing for battery HPCS-B1-DG3 and restored the equipment to operable without meeting Technical Specification Surveillance Requirement 3.8.4.3. Following identification, the licensee performed a battery service test and determined that the division 3 battery capacity was adequate to meet all operability requirements. The licensee initiated corrective action documents Action Requests AR 264204 and AR 264214 to address the failure to include all technical specification requirements into postmaintenance testing for battery HPCS-B1-DG3.

This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because the finding was a qualification deficiency confirmed not to result in loss of operability. 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 obtain an interdisciplinary review on the postmaintenance testing planned for battery HPCS-B1-DG3. Specifically, the shift manager failed to request input from system engineering and licensing on the decision to not perform a battery service test [H.1(a)]. (Section 1R19).

Inspection Report# : [2012003](#) (pdf)

Significance: G Jun 22, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Control High Energy Line Break Barriers

Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of the licensee to control impairment of high energy line break barriers in accordance with Procedure PPM 1.3.57, "Barrier Impairment," Revision 28. On May 6, 2012, the licensee performed Surveillance Procedure ISP-CIA-Q901, "ADS Accumulator Backup Low Pressure Alarm Division 1 CFT/CC,"

Revision 7. A high energy line break barrier associated with instrument rack E-IR-67 was breached and left unattended during the surveillance. The licensee failed to meet requirements specified in Procedure PPM 1.3.57, "Barrier Impairment," Revision 28, which required a barrier impairment permit for the high energy line break barrier that was breached. Additionally, the inspectors determined that the licensee failed to declare inoperable and unavailable, all equipment impacted by the breached high energy line break barrier on instrument rack E-IR-67. As interim corrective action, the licensee initiated Night Order 1379 directing a more complete review of Procedure PPM 1.3.57 prior to work authorization on components that serve as hazard barriers. This issue was entered into the licensee's corrective action program as Action Request AR 263274.

This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the availability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to update surveillance procedures associated with high energy line break barriers such that individuals responsible for maintaining those barriers were knowledgeable of the requirements in Procedure PPM 1.3.57 [H.2(c)]. (Section 1R22).

Inspection Report# : [2012003](#) (pdf)

Significance:  Mar 23, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Take Corrective Actions to Address Hardened Lubricant Safety-Related Disconnect Switches

Green. The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the licensee's failure to take corrective actions to address hardened lubricant in safety-related 480V disconnect switches. On December 7, 2011, a safety-related 480V disconnect switch unexpectedly opened due to hardened grease. The inspectors discovered that a similar issue occurred in October 2009, and that evaluation of the issue under Action Request AR 206698 concluded that preventive maintenance instructions were inadequate because they did not require removal of hardened lubricant from disconnect switches prior to the application of fresh lubricant. The inspectors determined that the licensee failed to perform an extent of condition review to identify other disconnects that had received similar preventive maintenance including the 480V disconnect switch that unexpectedly opened on December 7, 2011. Following identification of this issue, the licensee discovered 147 additional critical disconnects that may not have been adequately lubricated and initiated work requests to verify the disconnects were fully latched until the revised maintenance procedures could be implemented. This issue was entered into the licensee's corrective action program as Action Request AR 253985.

The failure to take prompt corrective actions to address hardened lubricant in safety-related disconnect switches was a performance deficiency. This finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors used Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the finding was of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to thoroughly evaluate the extent of the condition and need for resolution for all components potentially affected by the inadequate maintenance procedure identified in Action Request AR 206698 [P.1(c)] (Section 1R04).

Inspection Report# : [2012002](#) (pdf)

Significance:  Mar 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Reportability Associated with Division 3 Diesel Generator Inoperability

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 21, when evaluating the past operability and reportability of the division 3 emergency diesel generator. On February 28, 2010, the division 3 emergency diesel generator exhibited erratic behavior caused by foreign material. The licensee's reportability evaluation was completed prior to receipt of the forensic analysis which provided new information that foreign material had been present in the governor actuator since October 2005. Contrary to licensee procedure SWP-CAP-01, no re-evaluation of past operability or reportability was performed following receipt of this new information. Following identification of this issue by the inspectors, the licensee concluded that the division 3 diesel generator could not operate for its required mission time with the foreign material present and that the component was inoperable for a period greater than allowed by the plant's technical specifications. The licensee submitted Licensee Event Report 2012-001-00 on January 13, 2012, and supplemental Licensee Event Report 2012-001-01 on March 13, 2012. This issue was placed in the licensee's corrective action program as Action Requests AR 251950 and 255926.

The failure to follow requirements provided in procedure SWP-CAP-01 was a performance deficiency. This finding was more than minor because, if left uncorrected, the failure to follow procedures associated with the corrective action program could become a more significant safety concern. Specifically, the failure to follow corrective action program procedures could result in unrecognized reportable conditions or unevaluated degraded or nonconforming conditions. The inspectors used Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the findings was of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. 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 conclusions drawn in the root cause evaluation were not communicated to personnel responsible for making decisions associated with reportability such that a required licensee event report could be submitted in a timely manner [H.1(c)] (Section 40A3).

Inspection Report# : [2012002](#) (*pdf*)

Barrier Integrity

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Provide Maintenance Procedures for Control Room Emergency Ventilation System Dampers

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)

Inspection Report# : [2012005](#) (*pdf*)

Significance: **G** Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Adequate Surveillance Testing of the Control Room Air Conditioning System

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)

Inspection Report# : [2012005](#) (*pdf*)

Significance: **G** Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Shutdown Cooling Isolation Logic Bypass Procedures Results in Loss of Safety Function

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 40A2)

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Sep 21, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Provide Adequate Work Instructions

Green. The inspectors reviewed a self-revealing Green non-cited violation of 10 CFR Part 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide work instructions appropriate for performing maintenance on the standby gas treatment system. Specifically, the licensee failed to provide work instructions that would have precluded a trip of the in-service reactor building ventilation system during calibration of the standby gas treatment system. The licensee updated similar work orders to provide provisions to swap to redundant trains to preclude future trips of running equipment. The licensee entered this issue into the corrective action program as Action Request AR 267373.

This performance deficiency was more than minor because it affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide 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 to be of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for by the standby gas treatment system. The inspectors determined the finding had a cross-cutting aspect in the area of human performance associated with the work control component in that the licensee failed to appropriately coordinate work activities to address the operational impact to the reactor building ventilation system when calibrating the standby gas treatment control flow transmitter [H.3(b)] (Section 1R19).

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Mar 23, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Validate Compensatory Measures During Maintenance

Green. The inspectors identified a non-cited violation of Technical Specification 3.7.3, "Control Room Emergency Filtration (CREF) System," for the licensee's failure to provide adequate compensatory measures during maintenance on the control room emergency filtration system. Specifically, the licensee failed to validate that the compensatory measures used in Procedure PPM 1.3.57, "Barrier Impairment," Revision 26, were adequate to limit dose to operators to within FSAR limits during maintenance on the control room emergency filtration system. The licensee issued a stop work order pending resolution of appropriate compensatory measures. The inspectors identified this issue during follow-up inspections of Action Request 256748 that documented transferring of dedicated individual duties during maintenance to unqualified individuals. This issue was entered into the licensee's corrective action program as Action Request 256960.

The failure to provided adequate compensatory measures during maintenance on the control room emergency filtration system was a performance deficiency. This finding was more than minor because it 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. The inspectors used Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) since it only represented a degradation of the radiological barrier function provided for the control room. The inspectors determined that a cross-cutting issue was not applicable since the procedure that introduced the mitigating measures was first introduced in 2008 without verification that the mitigating measures were adequate and, therefore, not reflective of current plant performance (Section 1R19).

Inspection Report# : [2012002](#) (*pdf*)

Emergency Preparedness

Significance: **W** Dec 31, 2012

Identified By: NRC

Item Type: VIO Violation

Failure to Maintain Accurate EAL Thresholds

TBD. An apparent violation of 10 CFR 50.54(q) was identified involving the failure to maintain a standard emergency action level scheme in September 2000 and November 2010 in accordance with the requirements of 10 CFR 50.47(b) (4). The licensee inappropriately calculated and changed Site Area Emergency and General Emergency radiation monitor threshold values on EAL (Emergency Action Levels) Table 3, "Effluent Monitor Classification Thresholds." These changes adversely affected the ability of the licensee to properly classify events involving a radiological release.

The inspectors determined the licensee's inaccurate calculation of Site Area Emergency and General Emergency radiation monitor thresholds in September 2000 and November 2010 were performance deficiencies within the licensee's control. This finding is more than minor because it was associated with the procedure quality and emergency response organization performance cornerstone attributes. This finding was evaluated using the Emergency Preparedness Significance Determination Process and was preliminarily determined to be of low to moderate safety significance (White) because it was a degraded risk significant planning standard function. The planning standard function was degraded because Columbia Generating Station would have been delayed in recognizing Site Area Emergencies and General Emergencies because of the inaccurate reactor building stack monitor EAL Table 3 values. This finding was entered into the licensee's corrective action system as Action Requests AR00244316, AR00244578, and AR00244838 (Section 1EP4).

Inspection Report# : [2012502](#) (pdf)

Significance: **W** Dec 31, 2012

Identified By: NRC

Item Type: VIO Violation

Failure to Maintain Accurate Methods for Dose Assessment

TBD. An apparent violation of 10 CFR 50.54(q) was identified involving the failure to maintain adequate methods for assessing the actual or potential consequences of a radiological emergency between April 2000 and December 2011 in accordance with the requirements of 10 CFR 50.47(b)(9). The licensee incorporated inaccurate gas calibration and Xenon equivalency factors into dose projection software, resulting in inaccurate offsite dose calculations involving radiological releases measured by the reactor building effluent radiation monitor.

The inspectors determined the failure to maintain a dose assessment process capable of providing a technically adequate estimate of offsite dose was a performance deficiency within the licensee's control. This finding is more than minor because it was associated with the emergency response organization performance and the Facilities and Equipment cornerstone attributes. This finding was evaluated using the Emergency Preparedness Significance Determination Process and was preliminarily determined to be of low to moderate safety significance (White) because it was a degraded risk significant planning standard function. The planning standard function was degraded because some methods for assessing the offsite consequences of a radiological release were inaccurate between April 2000 and December 2011. This issue has been entered into the licensee's corrective action system as Action Requests AR00244316 and AR00244578 (Section 1EP5).

Inspection Report# : [2012502](#) (pdf)

Significance: **G** Sep 21, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify a Performance Weakness During a Drill

Green. A non-cited violation of 10 CFR 50.47(b)(14) was identified for the licensee's failure to identify a deficiency occurring during a drill to ensure correction. Specifically, the licensee did not identify a failure to provide accurate information in the notification of an Alert. Corrective actions for the inaccurate notification were not implemented because the deficiency was not identified. The failure to identify a deficiency during a drill is a performance deficiency within the licensee's control. The licensee has entered this issue into their corrective action program as Action Request 00269740.

This finding is more than minor because failures to identify and correct deficiencies affect the Emergency Response Organization Performance Cornerstone attribute. The finding was evaluated using the Emergency Preparedness Significance Determination Process and was identified as having very low safety significance because it was a failure to comply with NRC requirements and was not a loss of the planning standard function. The planning standard function was not lost because the failure to identify weak performance occurred in a limited-scope drill. The finding was assigned a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program 'Low Threshold' component because the licensee failed to completely and accurately recognize a performance deficiency [P.1(a)] (Section 40A1).

Inspection Report# : [2012004](#) (*pdf*)

Occupational Radiation Safety

Significance:  Sep 21, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Maintain Dose ALARA due to Poor Job Execution

Green. The inspector reviewed a self-revealing finding for failure to maintain doses as low as is reasonably achievable (ALARA) due to poor job execution. The licensee estimated that ALARA Task 11748210101 attached to Radiation Work Permit 30002666, "R20 TG Cond-HX-9 Replacement and Repairs – Inside Condenser," would accrue 10.387 person-rem. However, the actual dose accrued was 19.447 person-rem. The primary reasons for exceeding the estimated dose was identified as a lack of experience and poor job execution that led to increased man hours. This was documented in the licensee's corrective action program as Action Request 00245959.

This finding is greater than minor because it is associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective in that it caused increased collective radiation dose for occupational workers. The inspector determined this finding to be of very low safety significance because although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. Additionally, this finding had a cross-cutting aspect in the human performance area, associated with the work practices component, because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)] (Section 2RS02).

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Sep 21, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Maintain Dose ALARA due to Inadequate Job Planning

Green. The inspector reviewed a self-revealing finding, with two examples, for failure to maintain doses as low as is reasonably achievable (ALARA) due to inadequate job planning. In the first example, the licensee estimated that Radiation Work Permit 30002636, "R20 DW CRA-M/FN Maintenance and Repairs *LHR*," would accrue 10.549 person-rem (as revised), but actually accrued 22.657 person-rem. In the second example, the licensee originally estimated that ALARA Task 11824040102 attached to Radiation Work Permit 30002684, "R20 RF Wetwork In vessel, SFP, and Equipment Pool *HR*," would accrue 3.557 person-rem, but the actual dose accrued was 11.683 person-rem. The primary reason for exceeding the estimated dose was identified as inadequate job planning. This was

documented in the licensee's corrective action program as Action Requests 00238694 and 00239554, respectively.

This finding is greater than minor because it is associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective in that it caused increased collective radiation dose for occupational workers. The inspector determined this finding to be of very low safety significance because although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. This finding had a cross-cutting aspect in the human performance area, associated with the work control component, because the licensee failed to incorporate job site conditions, including plant structures, systems, and components, human-system interface, radiological safety, and planned contingencies and compensatory actions to be consistent with nuclear safety [H.3(a)] (Section 2RS02).

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 21, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Conservative Electronic Dosimeter Alarm Set-points

Green. A non-cited violation of Technical Specification 5.4.1a was identified for the failure to follow station procedures and establish conservative electronic dosimeter set-points prior to entering the radiologically controlled area during emergency preparedness exercises and drills. On August 28, 2012, during the emergency preparedness exercise, the licensee used an exercise radiation work permit that established electronic dosimeter set-points of 5 millirem dose and 50 millirem per hour dose rate. As part of the exercise scenario, the inspectors observed Operations Support Center personnel demonstrate the ability to raise electronic dosimeter alarm set-points to 200 millirem dose and 1000 millirem/hour. However, prior to entering the plant's actual radiologically-controlled area the licensee failed to re-establish conservative electronic dosimeter set-point values for the entry in accordance with Station Procedure GEN-RPP-02, "ALARA Planning and Radiation Work Permits," Revision 29, and Radiation Work Permit 30002943. The inspectors also identified eight additional occurrences of non-conservative dosimeter set-points when entering the radiologically controlled area during previous exercises and drills. The licensee entered this issue into the corrective action program as Action Request AR 269790.

The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material, and if left uncorrected, it would potentially result in unplanned radiation exposure. The inspectors evaluated the finding using Inspection Manual Chapter 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding was of very low safety significance because it did not: (1) involve ALARA planning and work controls; (2) result in an overexposure; (3) involve a substantial potential for overexposure; and (4) compromise the licensee's ability to assess dose. In addition, the finding had human performance cross-cutting aspects associated with work control because interdepartmental communication, coordination, and cooperation was necessary to assure plant and human performance [H.3(b)] (Section 4OA5).

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 21, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Radiation Work Permit Requirements to Inform Workers about Radiological Conditions

Green. A non-cited violation of Technical Specification 5.4.1.a was identified for the failure to follow radiation work permit requirements to brief workers on the radiological conditions in the work area and to provide workers current radiological survey information. On August 28, 2012, during the biennial graded emergency preparedness exercise, mock repair teams entered the radiologically controlled area without being briefed on the actual radiological conditions and without being provided with current radiological survey information. The licensee entered this issue into their corrective action program as Action Request AR 269791.

The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone exposure control attribute of program and process and it affected the cornerstone objective to ensure the adequate

protection of the worker health and safety from exposure to radiation from radioactive material because it could have increased worker exposure while in the radiologically-controlled area. The inspectors evaluated the finding using Inspection Manual Chapter 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding was of very low safety significance because it did not: (1) involve ALARA planning and work controls; (2) result in an overexposure; (3) involve a substantial potential for overexposure; and (4) compromise the licensee's ability to assess dose. In addition, the finding had human performance cross-cutting aspects associated with resources because the licensee did not ensure that complete, accurate, and up-to-date documentation (radiological surveys) were adequate to ensure radiological safety [H.2(c)] (Section 4OA5).

Inspection Report# : [2012004](#) (*pdf*)

Significance: G Mar 23, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Unauthorized Entry into a High Radiation Area

Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.7, "High Radiation Area," when a mechanic entered into a high radiation area without authorization and using required controls on March 7, 2012. Specifically, the mechanic entered the high radiation area without authorization and was not knowledgeable of the dose rates in the high radiation area. This issue was entered into the licensee's corrective action program as Action Request AR 259217.

The entry into a high radiation area without authorization and the required controls was a performance deficiency. This finding was more than minor because it affected the human performance attribute of the Occupational Radiation Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Manual Chapter 0609, Appendix C "Occupational Radiation Safety Significance Determination Process," the finding was determined to have very low safety significance (Green) because: (1) the finding is not related to as-low-as-reasonably-achievable planning, (2) did not involve an overexposure, (3) did not involve a substantial potential for overexposure, and (4) did not compromise the licensee's ability to assess dose. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with work practices component, self and peer checking. Specifically, the mechanic failed to perform self check techniques to ensure that the work activity was performed safely when encountering a high radiation area sign at the high radiation boundary and instead of stopping at the boundary, proceeded past [H.4(a)] (Section 4OA2).

Inspection Report# : [2012002](#) (*pdf*)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

