

## Columbia Generating Station 1Q/2013 Plant Inspection Findings

---

### Initiating Events

**Significance:** G 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*)

---

### Mitigating Systems

**Significance:** G Mar 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Maintain Licensed Operator Examination Integrity**

• Severity Level IV. The inspectors identified a non-cited violation of 10 CFR Part 55.49, "Integrity of Examinations and Tests," and an associated Green finding, for the failure of the licensee to ensure the integrity of remedial tests given as part of the 2011 licensed operator annual operating test was maintained. During the 2011 annual operating test, 10 licensed operators received remedial simulator scenario tests that were comprised completely of simulator scenario test material that had been previously administered to other licensed operators in previous weeks. Allowing more than 50 percent of an operating test section to be comprised of examination material previously administered on

any other test in the same examination cycle is considered an examination integrity compromise. However, an evaluation of the 2011 examination results for the affected population showed that the compromise did not have an actual effect on the equitable and consistent administration of the examination. The licensee entered the finding into the corrective action program as Action Request 274876.

The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. The finding was more than minor because it adversely affected the human performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge and abilities on the annual operating test could be a precursor to a more significant event. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance (Green). Although the 2011 finding resulted in a compromise of the integrity of annual operating tests, with no compensatory actions immediately taken when the compromise should have been discovered, the equitable and consistent administration of the annual operating tests was not actually affected by this compromise. In addition, the failure to meet 10 CFR 55.49 was evaluated through the traditional enforcement process, which resulted in its association with a Severity Level IV (SL-IV) violation consistent with Sections 2.2.4 and 6.4d of the NRC Enforcement Policy. This finding has a cross-cutting aspect in the area of resources associated with ensuring that procedures are adequate to ensure nuclear safety. Review of the issue in a licensee-developed barrier analysis revealed that there were no directions or guidance provided in their licensed operator requalification program procedures to define the expectations for applying the 50 percent examination overlap industry standard on their examinations [H.2 (c)](Section 1R11).

Inspection Report# : [2013002](#) (*pdf*)

**Significance:** G Mar 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure that All License Conditions are Met for Licensed Operators**

Green. The inspectors identified a non-cited violation of 10 CFR 55.53, "Conditions of License," for the failure of the licensee to ensure that licensed operators met all the conditions of their licenses in order to be considered an active watch stander. Specifically, the licensee failed to ensure that two licensed operators met the complete plant tour requirement specified in 10 CFR 55.53(f)(2) prior to license reactivation and subsequent performance of licensed operator duties. The licensee entered the finding into the corrective action program as Action Request 274726.

The failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met the conditions of their licenses as defined in 10 CFR Part 55.53 was a performance deficiency. This finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, licensed operators that do not properly complete the requirements of 10 CFR 55.53(f)(2) prior to resuming control room watch standing duties may commit operator errors that could cause mitigating systems to fail to respond properly. Using NRC Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets, the team was directed to use Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," to process the violation. However, the team determined that NRC Manual Chapter 0609, Appendix I, could not be used to process this. Based on direction from regional management to use NRC Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the finding was determined to have very low safety significance because a prior similar violation's significance bounded this finding's significance. The prior similar violation occurred at Comanche

Peak (NCV 05000445/2011004-02) was determined to have very low safety significance because more than 20 percent of the license reactivation records reviewed contained these deficiencies as processed under the last revision to NRC Manual Chapter 0609, Appendix I.

This finding was determined to have a cross-cutting aspect in the area of human performance, associated with resources, because the licensee failed to ensure complete, accurate, and up-to-date procedures are available and adequate to assure nuclear safety. Specifically, the licensee failed to specify in procedures what plant areas must be included to meet the requirements of a complete plant tour [H.2(c)] (Section 1R11).

Inspection Report# : [2013002](#) (pdf)

**Significance:**  Mar 23, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Address Noticeable Differences in the Simulator in Accordance with ANSI/ANS 3.5-1998 and -2009**

Green. The inspectors identified a finding associated with addressing noticeable differences between the simulator and the plant in accordance with the standards of ANSI/ANS 3.5-1998 and -2009. Specifically, there was a failure to correct a difference in the operation of recirculation pumps identified in 2006 while conducting transient testing prescribed by the ANSI standard. In addition, there was a failure to install a simulator modification to reflect an actual reference plant modification relevant to operator training within 24 months. The licensee initiated corrective action documented in Action Request 277631.

Failure to correct noticeable differences between the simulator and the plant that were relevant to operator training in accordance with the ANSI/ANS 3.5 Standard (-1998 and -2009 revisions) was a performance deficiency. The performance deficiency is more than minor because it adversely impacted the human performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that not correcting noticeable differences between the simulator and the plant can provide the potential for negative training to the licensed operators. Using Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," Flowchart Block #14, the finding was determined to have very low safety significance (Green) because it dealt with deficiencies associated with simulator testing, modification, and maintenance and there was no actual plant event caused by the issue with maintaining the simulator. This finding has a cross-cutting aspect in the problem identification and resolution area associated with the corrective action program - taking appropriate corrective action [P.1(d)](Section 1R11).

Inspection Report# : [2013002](#) (pdf)

**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:** G 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:** G 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:** G 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*)

## 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:**  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 4OA2)

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

**Significance:** G 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*)

---

## **Emergency Preparedness**

**Significance:** **W** Dec 31, 2012

Identified By: NRC

Item Type: VIO Violation

### **Failure to Maintain Accurate EAL Thresholds**

10 CFR 50.54(q)(2), requires, in part, that a holder of a license under Part 50 shall follow and maintain the effectiveness of an emergency plan that meets the requirements in Appendix E to Part 50 and, for nuclear power reactor licensees, the planning standards of 50.47(b).

1. 10 CFR 50.47(b)(4), requires, in part, that the onsite and offsite emergency response plans for nuclear power reactors must have a standard emergency classification and action level scheme in use, the bases of which include facility system and effluent parameters.

Contrary to the above, between September 2000 and January 2012, Columbia Generating Station failed to maintain the effectiveness of an emergency plan that met the planning standards of 50.47(b), which includes the requirement to have onsite and offsite emergency response plans that have a standard emergency classification and action level scheme in use, the bases of which include facility system and effluent parameters.

Specifically, the licensee did not maintain a standard emergency action level scheme because inaccurate effluent radiation monitor thresholds were incorporated into

emergency action level Table 3, "Effluent Monitor Classification Thresholds." In September 2000 and November 2010 inaccurate calculation of Site Area Emergency and General Emergency effluent thresholds were incorporated into Table 3. These errors adversely affected the licensee's ability to properly classify an emergency event involving a radiological release. In addition, one General Emergency threshold could not be measured on its associated radiation monitor. This violation is associated with a White Significance Determination Process finding.

Inspection Report# : [2012503](#) (*pdf*)

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

Inspection Report# : [2013009](#) (*pdf*)

**Significance:** **W** Dec 31, 2012

Identified By: NRC

Item Type: VIO Violation

**Failure to Maintain Accurate Methods for Dose Assessment**

10 CFR 50.47(b)(9) requires, in part, that nuclear power reactors have adequate methods for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition in use.

Contrary to the above, between April 2000 and December 2011, Columbia Generating Station failed to maintain the effectiveness of an emergency plan that met the planning standards of 50.47(b), which includes the requirement to maintain adequate methods for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition.

Specifically, changes to parameters used in offsite dose calculations for the reactor building effluent monitor resulted in inaccurate offsite dose calculations. This resulted in overestimating offsite dose between April 2000 and December 2007 and underestimating dose between December 2007 and December 2011. These errors adversely affected the licensee's ability to assess the consequences of a radiological release, affected the classification of emergencies using dose assessment results, and had the potential to impact protective action recommendations to protect public health and safety. This violation is associated with a White Significance Determination Process finding.

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

Inspection Report# : [2013009](#) (*pdf*)

Inspection Report# : [2012503](#) (*pdf*)

**Significance:** **N/A** Dec 31, 2012

Identified By: NRC

Item Type: VIO Violation

**Failure to Report a Loss of Emergency Capability**

10 CFR 50.72(b)(3)(xiii), requires, in part, with exceptions not applicable here, that a licensee shall notify the NRC as soon as practical and in all cases within eight hours of any event that results in a major loss of emergency assessment capability.

Contrary to the above, on October 18, 2011, Columbia Generating Station failed to notify the NRC as soon as practical and within 8 hours of any event that results in a major loss of emergency assessment capability. Specifically, the licensee identified longstanding inaccuracies in the Quick Emergency Dose Projection System but failed to recognize those inaccuracies as a major loss of emergency assessment capability, and did not

report these deficiencies in radiological assessment methods to the NRC until June 7, 2012. This is a Severity Level III violation (Section 6.6).

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

Inspection Report# : [2012503](#) (*pdf*)

Inspection Report# : [2013009](#) (*pdf*)

**Significance:**  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:** G 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:** G 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*)

---

## 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

**Significance:** N/A Mar 23, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Obtain NRC Approval for Changes to Control Room HVAC Requirements**

Severity Level IV. The inspectors identified a non-cited violation of 10 CFR 50.59, “Changes, Tests, and Experiments,” because the licensee failed to obtain a license amendment, pursuant to 10 CFR 50.90, prior to implementing a change to the control room heating, ventilation and air conditioning system (HVAC). Specifically, through the course of several Final Safety Analysis Report amendments, the licensee changed the control room habitability requirements from 75 degrees Fahrenheit (F)  $\pm$  3 degrees F to 85 degrees F effective temperature without obtaining a license amendment.

The violation was evaluated using Section 2.2.4 of the NRC Enforcement Policy, because the violation may impact the ability for the NRC to perform its regulatory oversight function. In accordance with the NRC Enforcement Policy, the significance determination process was used to inform the significance of the failure to obtain a license amendment prior to implementing a proposed change to the main control room design requirements. 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 does not represent a degradation of the radiological barrier function provided for the control room and does not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere. Therefore, in accordance with Section 6.1.d of the NRC Enforcement Policy, the significance was determined to be at Severity Level IV, since the impact of the incorrect changes was evaluated as having very low safety significance by the significance determination process. This issue was entered into the licensee's corrective action program as AR 280119, and therefore, this violation is treated as SL-IV NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. This violation did not have a cross-cutting aspect because it was strictly associated with a traditional enforcement violation (Section 1R22).

Inspection Report# : [2013002](#) (*pdf*)

Last modified : June 04, 2013