

## Columbia Generating Station 1Q/2015 Plant Inspection Findings

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### Initiating Events

**Significance:** G Jun 22, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Perform Adequate Verification of Breaker Cubicle Fit Results in Loss of Reactor Recirculation Pump**

The inspectors reviewed a self-revealing Green finding for the licensee's failure to verify that circuit breaker E-CB-S5 was properly installed in accordance with procedure SOP-ELEC-BKR-OPS, "AC Electrical Breaker Racking," Revision 10. The improper installation of breaker E-CB-S5 resulted in an unexpected loss of bus E-SH-5 during a bus transfer and trip of reactor recirculation pump RRC-P-1A. The licensee entered this issue into their corrective action program as Action Request (AR) 302282.

The finding was more than minor because it affected the configuration control attribute of the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding is of very low safety significance (Green) because it did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding has a cross-cutting aspect in the area of human performance because the licensee failed to ensure that tools, equipment and other resources were available to adequately support verification of breaker racking activities [H.1].

Inspection Report# : [2014003](#) (*pdf*)

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### Mitigating Systems

**Significance:** G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Comply with ECCS Technical Specifications**

The inspectors identified a non-cited violation of Technical Specification 3.5.1, "ECCS - Operating," for the licensee's failure to maintain the low-pressure coolant injection system operable. Specifically, the licensee failed to implement adequate compensatory measures for a removed barrier used to protect the residual heat removal system from flooding caused by a moderate energy line crack, resulting in inoperability of the system for a period greater than allowed by the plant's technical specifications. To restore compliance, the licensee issued Night Order 1621 to prevent future equipment inoperability due to inadequate compensatory measures. The licensee entered this issue into their corrective action program as Action Requests (ARs) 319653, 323449, and 323450.

The performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The resident inspector performed the initial significance determination for the performance deficiency using NRC Inspection Manual 0609,

Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” dated July 1, 2012. The finding required a detailed risk evaluation because it involved the loss of a single train of mitigating equipment for longer than the technical specification allowed outage time. Therefore, a Region IV senior reactor analyst performed a bounding detailed risk evaluation. The bounding change to the core damage frequency was 5E-12/year (Green). The dominant sequences included an internal flooding induced transient followed by random failures of the Division I and III systems. The risk was mitigated because other redundant systems remained available. This finding had a cross-cutting aspect in the area of human performance, procedure adherence, because the licensee failed to follow the barrier impairment procedure to install an adequate temporary flood curb [H.8]. (Section 1R06)

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Establish Appropriate Work Instructions for 480-Volt Motor Control Center Starters**

The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a, “Procedures,” for the licensee’s failure to provide adequate work instructions for performing maintenance on 480-volt motor control center starter PRA-42-8AA4B. Consequently, the starter’s thermal overload mounting screws were over-torqued resulting in an unexpected loss of pump house recirculation air fan PRA-FN-1B. The licensee repaired the improperly torqued thermal overload mounting screws and initiated AR 321368 to address the inadequate work instructions that resulted in the unexpected trip of the thermal overloads for fan PRA-FN-1B.

The performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions.” The inspectors determined that the finding was of very low safety significance because (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does 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. This finding had a cross-cutting aspect in the area of human performance, resources, in that the licensee failed to ensure that appropriate insights from the vendor manual were utilized when preparing work documents [H.1]. (Section 1R19)

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Follow Corrective Action Program Procedures**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instruction, Procedures and Drawings,” associated with the licensee’s failure to initiate condition reports for conditions adverse to quality as required by station procedures. Specifically, following identification that maintenance instructions did not provide the correct torque specifications for sixty-four thermal overloads, the licensee failed to initiate a condition report as required by procedure SWP-CAP-01, “Corrective Action Program,” Revision 30. The licensee initiated AR 324450 to document the sixty-four improperly assembled thermal overload relays and completed an operability evaluation for this non-conforming condition. The licensee also initiated AR 324458 to address the failure to initiate a condition report for an identified extent of condition issue as required by station procedures.

The performance deficiency was more than minor because it affected the human performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed the initial significance determination using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that the finding was of very low safety significance because (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does 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. This finding had a cross-cutting aspect in the area of human performance, field presence, in that the engineering department corrective action review board failed to identify and correct deviations from standards involving initiation of condition reports for identified extent of condition concerns [H.2]. (Section 4OA2)

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Sep 21, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Comply with Ultimate Heat Sink Technical Specification Level Requirements**

The inspectors identified a non-cited violation of Technical Specification 3.7.1, "Standby Service Water (SW) System and Ultimate Heat Sink (UHS)," for the licensee's failure to take the required actions for an inoperable ultimate heat sink. Specifically, the licensee failed to take action, as required by the plant's technical specifications, when the water level in an individual ultimate heat sink spray pond was less than 432 feet 9 inches mean sea level (MSL).

Inspection Report# : [2014004](#) (*pdf*)

**Significance:**  Sep 21, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Establish Preventative Maintenance Schedules for Fuel Oil Tank Vents**

The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to establish preventative maintenance schedules for the emergency diesel generator fuel oil storage and day tank flame arrestor vents. A misclassification of these vents as run-to-maintenance components resulted in the failure to establish preventative maintenance schedules.

Inspection Report# : [2014004](#) (*pdf*)

**Significance:**  Jun 22, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Take Corrective Actions to Address Extent of Cause for Service Water Pump Coupling Failures**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions" for the licensee's failure to implement corrective actions to address identified weaknesses in the preventative maintenance program. Specifically, the licensee failed to perform required inspections of the residual heat removal and low pressure core spray pumps which were identified during an extent of cause evaluation following the failure of service water pump 1A in June 2005. The licensee entered this issue into their corrective action program as Action Request AR 301887.

This finding was more than minor because, if left uncorrected, the failure to periodically inspect the residual heat removal and low pressure core spray pumps could become a more significant safety concern. Specifically, because these pumps are subject to NRC Part 21 report 1998-51-1 involving broken cast iron suction heads in type APKD pumps, the failure to inspect could result in unrecognized degraded conditions on these components that could potentially affect pump performance. The inspectors performed an initial screening of the finding in accordance with NRC Manual Chapter IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined this finding is of very low safety significance (Green) because: (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) the finding does 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 determined that this finding did not have a cross-cutting aspect since the decision to defer required inspections of the residual heat removal pumps and low pressure core spray pumps was made just prior to refueling outage R18 in May 2007 and were not reflective of current performance.

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Jun 22, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Implement Procedures That Ensure Operators Could Perform Time Critical Steps For Fire Events**

The inspectors identified a green non-cited violation of Columbia Generating Station Technical Specification 5.4.1.a for the failure of the licensee to implement procedures that ensure operators could perform time critical steps for fire events. The licensee restored compliance by initiating Action Request 306204 documenting the non-compliance with PPM 1.3.1 and issued Night Order 1527 reminding all operating crews of the requirements of PPM 1.3.1 for leaving the Protected Area.

This performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating System Cornerstone and affected the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. A senior reactor analyst assessed this finding using NRC Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination," dated September 20, 1013 and NRC Inspection Manual 0308, Attachment 3, Appendix F, "Technical Basis Fire Protection Significance Determination Process (Supplemental Guidance for Implementing IMC 0609, Appendix F) At Power Operations," dated February 28, 2005. The finding screened to Green because it had a low degradation rating. This finding had a cross-cutting aspect in the area of human performance associated with change management because the licensee failed to use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. By deviating from procedure PPM 1.3.1 to facilitate FFD testing and equipment logs, the licensee implemented a change that was not part of a systematic process and did not prioritize nuclear safety [H.3].

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Jun 22, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Maintain Procedures For a Design Basis Ashfall Event**

The inspectors identified a green non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to maintain procedures for mitigating a design-basis volcanic ashfall event. The licensee restored compliance by

initiating AR 304380 and modifying the staged combustion filters for the emergency diesel generator. Additionally, the licensee issued night order 1520 until the ABN-ASH "Ash Fall" procedure could be updated.

This performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance (Green) because it did not involve a loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event. This finding has a cross-cutting aspect in the area of problem identification and resolution because the licensee did not implement a corrective action program with a low threshold for issues. The licensee had several recent opportunities to identify this issue. In March 2011, a complete walkthrough of ABN-ASH "Ash Fall" was performed and problems were documented in AR 236015. Additionally, ashfall filter inventories in April 2011 under Work Order 02005018 and March 2014 under Work Order 02046624 failed to identify the issue [P.1].

Inspection Report# : [2014003](#) (pdf)

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## Barrier Integrity

**Significance:**  Jun 22, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Failure to Maintain Configuration Control of Reactor Building Ventilation Differential Pressure Controllers**

The inspectors reviewed a self-revealing Green non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to properly pre-plan calibrations of differential pressure controllers used to maintain secondary containment pressure. Specifically, the licensee failed to establish and document the gain settings for the reactor building normal ventilation system differential pressure controllers in accordance with procedure DES-2-19, "Instrument Master Data Sheets," Revision 0.

This performance deficiency was more than minor because it affected the equipment 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. Specifically, the failure to establish and maintain configuration control of reactor building ventilation differential pressure controllers resulted in multiple instances of unplanned inoperability of secondary containment. The inspectors performed an initial screening of the finding in accordance with NRC Manual Chapter IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using IMC 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," the inspectors determined this finding is of very low safety significance (Green) because the finding only represents a degradation of the radiological barrier function provided for by the standby gas treatment system. Because the cause of this finding was that the licensee had not thoroughly evaluated prior instances of loss of secondary containment pressure and concerns from licensed operators regarding the sluggish response of the train A differential pressure controller, this finding had a cross-cutting aspect in the area of problem identification and resolution in that the licensee did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance [P.2].

Inspection Report# : [2014003](#) (pdf)

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## Emergency Preparedness

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### Occupational Radiation Safety

**Significance:**  Jun 22, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

**Failure to implement high radiation area controls in an area with a dose rate greater than 1 rem/hour.**

The inspectors reviewed a Green, self-revealing, non-cited violation of Technical Specification 5.7.2, which was caused by licensee personnel's failure to control a high radiation area with radiation levels greater than 1 rem/hour when lifting the moisture separator during reactor vessel reassembly. Licensee personnel corrected the error by lowering the moisture separator into the reactor pool. The violation was entered into the licensee's corrective action program as AR 287521.

The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation because licensee personnel did not implement barriers intended to prevent workers from receiving unexpected dose. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the violation had very low safety significance because: (1) it was not as low as is reasonably achievable (ALARA) finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This finding has a cross-cutting aspect in the human performance area, associated with the work management component, because the organization did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority [H.5].

Inspection Report# : [2014003](#) (*pdf*)

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### Public Radiation Safety

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### 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.

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### Miscellaneous

**Significance:** N/A Jun 22, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Report an Unanalyzed Condition within Required Time Limits**

The inspectors identified a non-cited violation involving 10 CFR 50.73, "Licensee event report system." Specifically, the inspectors identified that the licensee failed to submit a required licensee event report, within specified time limits, for an unanalyzed condition involving unfused DC ammeters. The licensee entered this issue into their corrective action program as AR 309600.

The inspectors determined that the failure to make a required licensee event report within the time limits specified in regulations was a violation of 10 CFR 50.73. The violation was evaluated using Section 2.2.4 of the NRC Enforcement Policy, because the failure to submit a required licensee event report may impact the ability of the NRC to perform its regulatory oversight function. As a result, this violation was evaluated using traditional enforcement. In accordance with Section 6.9 of the NRC Enforcement Policy, this violation was determined to be a Severity Level IV, non-cited violation. The team determined that a cross-cutting aspect was not applicable because the issue involving untimely reports to the NRC was strictly associated with a traditional enforcement violation.

Inspection Report# : [2014003](#) (*pdf*)

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