Columbia Generating Station
2Q/2012 Plant Inspection Findings

Initiating Events

Significance: G 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)*

Significance: G Dec 31, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Follow Work Instructions when Fabricating a Gagging Device for Main Condenser Hotwell Surge Bypass Valve
Green. The inspectors reviewed a self-revealing finding for the licensee's failure to follow work instructions. Specifically, mechanics failed to properly implement Work Order 01188696, Task 7, when fabricating the gagging device used to maintain main condenser hotwell surge volume bypass valve closed during planned maintenance. As a result, on November 2, 2011, a rapid, unexpected rise in hotwell level and conductivity and a rapid drop in condensate storage tank level occurred. Subsequent review revealed that the gagging device installed on the main condenser hotwell surge volume bypass valve failed, which allowed a vacuum drag flow path of condensate storage tank water to the main condenser hotwell. Following identification, the licensee re-fabricated a gagging device in accordance with engineering’s specifications. This issue was entered into the licensee's corrective action program as Action Request AR 00251720.

The finding was more than minor because it affected the design 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. Using Inspection Manual Chapter 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 did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. 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 implement roles and authorities as designed when fabricating the gagging device for COND-V-170 [H.1(a)] (Section 1R12).
Inspection Report# : 2011005 *(pdf)*

Significance: G Sep 30, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Suppression Pool Cooling Procedure
Green. The team documented a Green self-revealing violation of Technical Specification 5.4.1(a), because operators failed to properly align the train B residual heat removal system prior to starting the pump. Consequently, approximately 269 gallons of water were transferred to the suppression pool because the reactor vessel suction valve was left open. In addition, plant operators had failed to follow operational performance standards in that they did not ensure that the control room supervisor had approved the work, they failed to utilized the appropriate alignment procedure, and the peer checker did not perform a meaningful peer check. The licensee entered the violation into their corrective action program as Action Request 248226.

The finding was more than minor because it affected the human performance attribute of the Initiating Events Cornerstone and affected the 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. The inspectors used NRC Inspection Manual 0609, Appendix G, “Shutdown Operations Significance Determination Process,” to evaluate the significance of the finding. The finding did not require a quantitative assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of control, as defined in Appendix G. Therefore, the finding screened as Green. The finding had a crosscutting aspect in the area of human performance associated with Work Practices because operators failed to properly utilize human error prevention techniques such as self and peer checking [H.4(a)] (Section 4OA3.8).

Inspection Report# : 2011008 *(pdf)*

Mitigating Systems

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)*

Significance: G 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: G 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 4OA3).
Inspection Report# : 2012002 *(pdf)*

Significance:  Dec 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Include Appropriate Acceptance Criteria in Offsite Power Alignment Procedure
Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, for the licensee’s failure to include appropriate steps in a surveillance test procedure. Specifically, Procedure OSP-ELEC-W101, “Offsite Station Power Alignment Check,” Revision 20, only verified that voltage was within a specified band and proper onsite breaker alignment, without verifying that the site was aligned to a credited power source. The inspectors determined that the licensee could complete the surveillance procedure as written and declare the surveillance requirement met even with the startup transformer being powered from the un-credited 115kV distribution system. The inspectors identified this issue in followup of an October 5, 2011 issue where the licensee experienced a loss of the licensing bases power supply to the startup transformer without operator knowledge. Following identification of this issue, the licensee revised Procedure OSP-ELEC-W101 to have operators verify the startup transformer is powered from the licensing basis power source. This issue was entered into the licensee’s corrective action program as Action Request AR 249931.

The finding was more than minor because it affected the procedure 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 0609.04, “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 a cross-cutting aspect was not applicable since the cause of the procedure inadequacy originated from its original implementation with missed opportunities in 2007 and therefore was not reflective of current plant performance (Section 1R15).
Inspection Report# : 2011005 *(pdf)*

Significance:  Sep 30, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Clearance Order Instructions
Green. The team documented a Green self-revealing violation of Technical Specification 5.4.1(a), Procedures, because operators failed to meet the conditions of a plant clearance order before opening main steam line drain valves. Consequently, operators inadvertently drained approximately 4300 gallons of reactor coolant to the under-vessel sump. Contributors to the violation included: 1) the reactor vessel assembly procedure was inadequate, in that it permitted maintenance personnel to place the reactor vessel level instruments in an uncalibrated condition; and 2) plant operators failed to follow operational performance standards when they were advised of the condition and proceeded to lower reactor vessel level for approximately 40 hours with inaccurate reactor vessel level instruments. The licensee entered the violation into the corrective action program as Action Request 245507.

The finding was more than minor because it affected the human performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of reactor

vessel level instruments that are used to respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors used NRC Inspection Manual 0609, Appendix G, “Shutdown Operations Significance Determination Process,” to evaluate the significance of the finding. The finding did not require a quantitative assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of control, as defined in Appendix G. Therefore, the finding screened as Green. The finding had a crosscutting aspect in the area of human performance associated with Work Practices because plant personnel, once faced with unexpected circumstances, continued to proceed in the face of uncertainty [H.4(a)](Section 4OA3.8).
Inspection Report# : 2011008 *(pdf)*

Significance: G Sep 30, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Verify Control Rod Drvie System Lineup
Green. The team documented a Green self-revealing violation of Technical Specification 5.4.1(a), because operators failed follow the control rod drive scram testing procedure, in that they failed to verify that no conflicting activities were in progress. Consequently, control rods were moving much faster than normal because the control rod drive exhaust system header was vented. In addition, plant operators had failed to follow operational performance standards in that they failed to know the plant status at all times and they proceeded with the surveillance when they were not aware of the expected results. Further, once the control rod behavior was clearly outside the expected norms, operators associated the unusual performance to inappropriate causes and continued to test additional control rods. The licensee entered the finding into their corrective action program as Action Request 248171.

The finding was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Operation of the control rod drive system with the exhaust header vented could cause damage. Further, control rods withdrawing faster than the normal under certain power configuration could challenge fuel integrity. The inspectors used NRC Inspection Manual 0609, Appendix G, “Shutdown Operations Significance Determination Process,” to evaluate the significance of the finding. The finding did not require a quantitative assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of control, as defined in Appendix G. Therefore, the finding screened as Green. The finding had a crosscutting aspect in the area of human performance associated with Work Practices because operators failed to properly utilize human error prevention techniques such as holding pre-job briefings as well as self and peer checking [H.4(a)] (Section 4OA3.8).
Inspection Report# : 2011008 *(pdf)*

Significance: G Sep 24, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Comply with Seismic Storage Requirements Procedure
Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for failure to accomplish activities affecting quality. From July 13, 2011, to July 19, 2011, the licensee failed to accomplish the storage of transient equipment in accordance with the seismic storage requirements in Procedure PPM 10.2.53, “Seismic Requirements for Scaffolding, Ladders, Man-Lifts, Tool Gang Boxes, Hoists, Metal Storage Cabinets, and Temporary Shielding Racks,” Revision 37. Specifically, a wheeled toolbox and lifting beam were stored in a location, near safety-related emergency diesel generator DG-1 conduits and service water pump SW-P-1A conduits, that did not meet the seismic overturning and sliding requirements. This condition was entered into the licensee’s corrective action program as Action Request 244730.

The inspectors determined that the failure to meet the seismic storage requirements of Procedure PPM 10.2.53 was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating System Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Since the finding affected
the safety of the reactor during a refueling outage and entry conditions for residual heat removal were initiated, the

inspectors used NRC Inspection Manual Chapter 0609, Appendix G, “Shutdown Operations Significance Determination Process,” to evaluate the significance of the finding. The finding did not require a quantitative risk assessment because adequate mitigating equipment remained available and the finding did not constitute a loss of control, as defined in Appendix G. Therefore, the finding screened as having very low safety significance, or Green. The inspectors determined that the finding had a
cross-cutting aspect in the area of human performance and work practices component, because the licensee failed to ensure personnel practices supported human performance. Specifically, the licensee failed to ensure supervisory and management oversight of work activities such that nuclear safety was supported [H.4.c] (Section 1R17).
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 24, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Maintain Adequate Reactor Core Isolation Cooling Surveillance Procedure
Green. The inspectors identified a noncited violation of Technical Specification 5.4.1.a for the failure of the licensee to maintain an adequate reactor core isolation cooling pump surveillance procedure. Specifically, Procedure OSP-RCIC/IST-B501, “RCIC LSFT Surveillance,” Revision 9, required that the licensee maintain bearing oil level in the green band during turbine operation per Procedure PPM 3.1.10, “Operating Data and Logs”, Revision 76. The inspectors found that the licensee staff did not have a common understanding of the requirement to maintain turbine oil level and that Procedure PPM 3.1.10 only provided guidance for bearing oil levels while the reactor core isolation cooling turbine was in a standby condition, not while the equipment was operating. Consequently, when the surveillance was performed, the inspectors noted that the turbine west end bearing oil level had decreased through the yellow band into the red band of the attached sight glass and was allowed to run for approximately 36 minutes after the control room was informed of the low bearing oil level. This condition was entered into the licensee’s corrective action program as Action Request 248813.

The finding was more than minor because it affected the procedure 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 0609.04, “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 verify the validity of underlying assumptions associated with the precaution listed in Procedure OSP-RCIC/IST-B501 [H.1(b)] (Section 1R04).
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 24, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Test Emergency Diesel Generator Critical Trips
Green. The inspectors identified a noncited violation of Technical Specification 3.8.1, “AC Sources – Operating,” for the licensee’s failure to meet testing requirements of Surveillance Requirement 3.8.1.13. Specifically, the inspectors determined the licensee had not performed tests to determine if the critical trips associated with the emergency diesel generators would perform their required function. Following identification of the issue by the inspectors, the licensee personnel revised the surveillance testing procedures associated with the emergency diesel generators. Critical trips for all three emergency diesel generators tested successfully. This issue was placed in the licensee's corrective action program as Action Request 244898.

The finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors determined the at-power significance determination process was to be used since this performance

deficiency affected at-power operations only. Using Inspection Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the inspectors determined the performance deficiency was of very low safety significance (Green) because it was a qualification deficiency confirmed not to result in a loss of operability since all three diesel generators tested successfully. The inspectors determined a cross-cutting aspect was not applicable to this finding because the decision to not test the non emergency trips was made early in plant operation and therefore not reflective of current plant performance (Section 1R15).
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 16, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Promptly Identify and Correct Degraded Flood Barriers
Green. The team identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” because Energy Northwest failed to promptly identify and correct degraded flood barrier floor coatings, which protected the Division 2 safety-related electrical switchgear room, remote shutdown room, and main control room from water intrusion. In 2002, flooding above the Division 2 electrical switchgear and remote shutdown rooms resulted in water intrusion into these rooms. The corrective action to prevent recurrence was to apply epoxy paint to the concrete floors above these rooms to ensure the floors would be leak tight. In April 2004, a degraded flood barrier floor coating was identified and operations staff requested an engineering evaluation. An hourly flood watch was established, however, an engineering evaluation was not performed to identify and correct the material deficiency and no justification was provided for establishing an hourly flood watch. The team determined that from April 2004, to September 14, 2011, at least 30 action requests were written that identified degraded epoxy coated flood barriers. Although the flood barriers were eventually patched, no engineering evaluation was performed to identify and correct the material deficiency. The team determined that the flood barriers were degraded approximately 36 percent of the time. The licensee entered this issue into the corrective action program as Action Request/Condition Report 249288.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences and if left uncorrected, could become a more significant safety concern because a flood in the area could adversely affect safety-related equipment. Using NRC Manual Chapter 0609 Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” dated January 10, 2008, the finding initially screened as potentially risk significant due to the flooding hazard, however, it was determined to be of very low risk significance (Green) because there was no actual loss or degradation of the safety function of the equipment protected by the flood barrier. In addition, this finding had a crosscutting aspect in the area of human performance associated with decision making because the licensee failed to communicate to persons who have the need to know in order to perform work safely, the basis for the decision to implement an hourly flood watch and not perform an engineering evaluation in a timely manner [H.1(c)]. (Section 4OA2).

Inspection Report# : 2011006 *(pdf)*

Significance: G Sep 16, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Three Examples of a Failure to Follow Procedures Results in Unsecured Transient Equipment and Ineffective Corrective Actions
Green. The team identified three examples of a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to follow station procedures. The licensee entered these examples into the corrective action program as Action Request/Condition Report 249287.
The first example was a failure to properly implement the instructions of the station’s seismic procedure, PPM 10.2.53, to evaluate and control transient equipment and materials. Specifically, during this inspection, on August 29 through September 1, 2011, the team identified unsecured bookcases, rolling metal ladders, and loose maintenance carts in the main control room, and barrels stored near a high pressure core spray pump that were not evaluated in accordance with seismic procedures.

The second example was the failure to perform a root cause analysis for long standing problems that have had ineffective corrective actions, as required by Procedure SWP-CAP-06, “Condition Review Group (CRG),” Revision 16, Specifically, between October 2007, and September 15, 2011, multiple examples of the failure to follow seismic procedures have been identified by past NRC inspection teams and licensee internal follow-up actions. Therefore, the team concluded Energy Northwest failed to recognize that a root cause analysis was required to address this long standing issue.

The third example was a failure to promptly implement interim corrective actions as required by Procedure SWP-CAP-01,"Corrective Actions Program." Specifically, after the team identified the improperly stored items on September 1, 2011, the licensee secured the material, but failed to implement any interim corrective actions to reduce the likelihood that the condition would not be repeated until longer term corrective actions could be implemented. On September 13, 2011, when the team asked the licensee about interim corrective actions, the licensee conducted a site stand-down to inform station personnel about the condition and procedural requirements.

The finding was more than minor because it was a programmatic deficiency, which affected the Mitigating Systems Cornerstone objective, and if left uncorrected, could lead to a more significant safety concern because a seismic event could result in the unavailability of systems used to mitigate the consequences of initiating events. Using Inspection Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to have very low safety significance (Green) because it did not result in an actual loss of a system safety function, did not result in a loss of a single train of safety equipment for greater than its technical specification allowed outage time, did not involve the loss or degradation of equipment specifically designed to mitigate a seismic, flooding, or severe weather initiating event, and did not involve the total loss of any safety function that contributes to an external event initiated core damage accident sequence. In addition, this finding had a crosscutting aspect in the area of human performance, associated with the work control component, because the licensee failed to appropriately plan work on multiple occasions, resulting in job site conditions which may have impacted plant components [H.3(a)]. (Section 4OA2)

Inspection Report# : 2011006 *(pdf)*

Barrier Integrity

Significance: G 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)*

Significance: G Dec 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Missed Procedural Step Results in Secondary Containment Pressure Excursion
Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to follow procedures. Specifically, on November 2, 2011, operators failed to follow Procedure SOP-HVAC/RB-START, "Reactor Building Ventilation Start", Revision 2, by skipping a required step for restoration of reactor building ventilation to the normal alignment following testing of secondary containment isolation valves. As a result, when the reactor building ventilation fans were started, secondary containment pressure increased rapidly to a peak positive pressure of approximately 0.29 inch of water, while secondary containment is normally maintained at 0.6 inch of water vacuum to meet its design basis function. When operators completed of the surveillance test of the secondary containment isolation valves, operators entered Procedure SOP-HVAC/RB-START at Step 5.1.5 which started the fans. The operators should have entered the procedure at Step 5.1.1 which would have placed pressure controller REA-DPIC-1B in manual. This step was necessary since the response time of the controller was not rapid enough to compensate for the rapid changes in air flows associated with a fan start. An event investigation concluded that the missed procedural step was caused by poor planning and preparation and less than adequate self and peer checks. This issue was entered into the licensee's corrective action program as Action Request AR 00251613.

The finding was more than minor because it affected the human 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 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined this finding to be of very low safety significance (Green) because it only represented a degradation of the radiological barrier function provided for by the standby gas treatment system. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee failed to use human error prevention techniques such as self and peer checking [H.4(a)] (Section 1R22).
Inspection Report# : 2011005 *(pdf)*

Significance: G Sep 24, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Maintenance and Lubrication Procedures
Green . The inspectors identified a noncited violation of Technical Specification 5.4.1.a for failure to follow Procedure PPM 10.2.80, "CVB and CSP Valve Air Operator Seal Replacement," Revision 4. On May 28, 2011, containment vacuum breaker valve CVB-V-1JK was rebuilt using Procedure PPM 10.2.80. During the procedure, the lubricant used for reassembling the pressure cylinder was not available and a substitute was used that did not meet procedure requirements specified in PPM 10.2.13, "Approved Lubricants" Revision 57. The same unapproved lubricant was used when rebuilding similarly designed containment supply purge valves CSP-V-5 and CSP-V-6. Consequently, both containment vacuum breaker valve CVB-V-1JK and similarly designed valves CSP-V-5 and CSP-V-6 exhibited signs of high friction after postmaintence testing was complete. Inspector review of the maintenance history for these components identified that an unapproved substitute was used when reassembling the pressure cylinder. This condition was entered into the licensee's corrective action program as Action Request 248154.

The finding was more than minor because if left uncorrected, the use of an inappropriate or unevaluated lubricant could become a more significant safety concern. This finding affected the barrier integrity cornerstone. Since the finding was discovered and corrected while in a shutdown condition, the inspectors evaluated the finding using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." The finding was determined to be of very low safety significance (Green) since it was not associated with a finding that degraded the licensee's ability to terminate a leak path or add reactor coolant system inventory when needed, did not significantly degrade the licensee's ability to recover decay heat removal when lost and did not impact a heat removal path to the

suppression pool while the vessel head was installed. The inspectors determined that the cause of the finding had a cross-cutting aspect in the area of human performance associated with the decision making component in that the licensee failed to make a safety-significant decision about lubricant selection using a systematic process and failed to obtain interdisciplinary reviews of the proposed substitute [H.1.a] (Section 1R12).
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 24, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Ensure Main Steam Isolation Valve Setpoint Change is Adequate
Green. The inspectors reviewed a self revealing violation of 10 CFR Part 50 Appendix B, Criterion III for the licensee's failure to perform an adequate review of a design modification that changed the isolation logic for the main steam isolation valves from Level 2 to Level 1. This modification inadvertently changed the isolation logic for outboard containment isolation valves located in containment isolation Groups 3 and 4 due to inadequate design reviews. Prior to the modification, the containment isolation Groups 3 and 4 received a half isolation when swapping power supplies in the reactor protection system. After the modification the containment isolation Groups 3 and 4 received a full outboard isolation signal when the reactor protection system A was swapped from its normal to alternate source. The licensee changed half of the isolation logic to be powered from reactor protection system B. This issue was entered into the licensee's corrective action program as Action Request 238830.

The finding was more than minor because it affected the design control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by events. Since the finding was discovered and corrected while in a shutdown condition, the inspectors evaluated the finding using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." The finding was determined to be of very low safety significance (Green) since it was not associated with a finding that degraded the licensee's ability to terminate a leak path or add reactor coolant system inventory when needed, did not significantly degrade the licensee's ability to recover decay heat removal when lost and did not impact a heat removal path to the suppression pool while the vessel head was installed. During the review of the licensee's root cause, the inspectors identified a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program component, because the licensee failed to communicate issues identified from self assessments to affected personnel. Specifically, the licensee failed to take corrective action from self assessments that identified the licensee's shortcomings in reviewing vendor prepared design documents [P.3.c] (Section 4OA3).
Inspection Report# : 2011004 *(pdf)*

Emergency Preparedness

Significance: G Dec 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Earthquake Abnormal Procedure
Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to follow the abnormal procedure for earthquakes. Specifically, the licensee failed to follow Procedure "ABN-Earthquake," Revision 6, by not recalibrating seismic instruments within 30 days of two earthquakes near the site that occurred on September 3, and October 14, 2011. Consequently, several seismic instruments were not all functional following the September 3, 2011 earthquake, and the same seismic monitoring devices were not functional during the October 14, 2011 earthquake, which complicated post-earthquake evaluation. Following identification of this issue, the licensee performed calibrations of all seismic instruments on November 2, 2011. This issue was entered into the licensee's corrective action program as Action Request AR 00251987.

The finding was more than minor because it affected the human performance attribute of the Emergency Preparedness Cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and

safety of the public in the event of a radiological emergency. Specifically, seismic instrumentation is required following a seismic event to evaluate the necessity of an emergency declaration and to determine the impact of strong motion on structures, systems and components or the need for a reactor shutdown. Using Inspection Manual Chapter 0609, Appendix B, “Emergency Preparedness Significance Determination Process” the inspectors determined this finding to be of very low safety significance (Green) because while some seismic instruments were non-functional and that did complicate the operator’s response to the October 14, 2011 earthquake, the non-functional instruments did not result in a loss of planning standard or risk-significant planning standard function. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the work control component because the licensee failed to appropriately plan work activities by incorporating the need for planned contingencies such as those needed to recalibrate seismic instruments following an earthquake [H.3(a)] (Section 4OA3).

Inspection Report# : 2011005 *(pdf)*

Occupational Radiation Safety

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)*

Significance: G Sep 16, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Survey
Green. The team reviewed a self-revealing noncited violation of 10 CFR Part 20.1501(a), for the failure to survey the residual heat removal pump A room after it was secured from service. Specifically, on August 29, 2011, during a tour with the NRC inspection team, the residual heat removal system engineer received a dose rate alarm. The team left the area and contacted radiation protection. Subsequent surveys identified dose rates were as high as 120 millirem per hour at 30 centimeters from the suction piping of the pump, which required the area to be posted and barricaded as a high radiation area. The licensee appropriately controlled the area, and entered the condition into their corrective action program as Action Request/Condition Report 247542.

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 because it resulted in an unposted high radiation area that affected the licensee's ability to adequately protect workers' health and safety from exposure to radiation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because it was not an ALARA finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. In addition, this finding had a crosscutting aspect in the area of human performance associated with the work control component, because the planned work activities did not incorporate the need for compensatory actions (e.g., surveys) to detect delayed changes in radiological conditions [H.3(a)].

Inspection Report# : 2011006 *(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

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