

Wolf Creek 1 1Q/2015 Plant Inspection Findings

Initiating Events

Significance: G Apr 01, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Ensure that Outage Work Could be Safely Performed During the Existing Plant Conditions

A Green self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for the failure to analyze the effects of performing motor operated valve testing on the plant being aligned to support alternate decay heat removal. The activity resulted in unplanned reactor pressure transients during solid plant operations. The inspectors reviewed the clearance order paperwork and found that the precautions for dealing with potential fluid and energy sources, specifically 'out of service equipment' were not clearly defined. The result was that the procedure assumed a normal refueling RHR alignment, when in fact the licensee had altered the system alignment to support an alternative reactor decay heat removal flow path using the spent fuel pool.

Failure to ensure that outage work could be safely performed during the existing plant conditions was a performance deficiency. Specifically, when the licensee revised the outage plan shortly before the start of the Mid-cycle Outage 20, they did not re-perform the risk evaluation for the potential fluid and energy sources to account for the unusual configuration established to allow for alternate decay heat removal. The performance deficiency is more than minor because it affected the configuration control attribute of the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. A region based senior reactor analyst performed a simplified risk evaluation and additionally considered guidance from Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." This was used to inform the assessment using Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 15, 2005. The analyst determined that the finding had very low safety significance (Green) because the risk deficit was less than 1E-6. The inspectors determined that the finding had a cross-cutting aspect of teamwork in the area of human performance in that individuals and work groups failed communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, the licensee developed the alternate decay heat removal alignment shortly before the outage, however the effects of the implementation were not communicated to the schedulers and operators who had already made risk assumptions based on different anticipated plant conditions.

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

Mitigating Systems

Significance: G Mar 28, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Assess the Operability of Emergency Diesel Generator B during Emergent Work Activities

The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, associated with the failure to

properly preplan maintenance such that it would not affect safety-related equipment. Specifically, during emergent work activities on January 29, 2015, the licensee's maintenance planning failed to recognize that when electrical cabinet doors containing safety-related under voltage and under frequency relays were opened to accomplish troubleshooting activities, the cabinet was not in a seismically qualified configuration. Thus the maintenance activity had the potential to impact the reliable operation of emergency diesel generator B during a seismic event. The licensee initiated Standing Order 37, "Safety Related Cabinet Operability Requirements," Revision 0, to provide the requirements for assessing operability of safety-related electrical cabinet and panel doors out of their seismically qualified configuration during maintenance activities. The licensee entered this issue into their corrective action program for resolution as Condition Reports 91501 and 94605.

The licensee's failure to properly preplan maintenance such that it would not affect safety-related equipment during emergent work activities was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating event to prevent undesirable consequences (i.e., core damage). Specifically, the licensee's failure to properly preplan maintenance resulted in emergency diesel generator B being placed in a condition that did not meet its seismic design requirements. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Finding At-Power," dated June 19, 2012, inspectors determined that the finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design and qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The finding has a cross-cutting aspect in the area of human performance associated with work management. Specifically, the licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority, including the identification and management of risk commensurate to the work.

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

Significance:  Mar 28, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Complete an Adequate Operability Evaluation for Declaring the Train A Control Room Air Conditioning Unit Operable

The inspectors identified non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to complete an adequate operability evaluation in accordance with procedure AP-28001, "Operability Evaluations," Revision 24 following the failure to meet a surveillance test acceptance criteria. Specifically, the licensee did not have an accurate technical basis for declaring the train A control room air condition unit operable when the minimum air flow rate was not met. The licensee's operability evaluation, which declared the train A control room air condition unit operable, incorrectly applied instrument uncertainty and used a superseded minimum air flow value. When these inaccuracies were addressed, the licensee determined the train was inoperable. The licensee entered this issue into their corrective action program as Condition Report 92274.

The licensee's use of an inadequate technical basis for an operability evaluation of a non-conforming condition resulting in the train A control room air conditioning air condition unit being declared operable when it was actually inoperable was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the associate cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating

event to prevent undesirable consequences (i.e., core damage). Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Finding At-Power," dated June 19, 2012, inspectors determined that the finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design and qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The finding has a cross-cutting aspect in the area of human performance associated with conservative bias component because the licensee did not use a decision making-practice that emphasized prudent choices over those that are simply allowable. A proposed action was determined to be safe in order to proceed, rather than unsafe in order to stop.

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

Significance:  Nov 07, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Alternative Shutdown Procedure

The team identified a non-cited violation of Technical Specification 5.4.1.d for the failure to implement and maintain adequate written procedures covering fire protection program implementation. Specifically, the licensee failed to maintain an alternative shutdown procedure that ensured operators could safely shut down the plant under all postulated fire scenarios. A scenario which could impact the operation of the required diesel generator was not adequately addressed. The licensee implemented a fire watch in the control room as a compensatory measure until corrective actions can be taken. The licensee documented the deficiencies with Procedure OFN RP-017, "Control Room Evacuation," Revision 45, in Condition Report 00089788.

The failure to maintain adequate written procedures covering fire protection program implementation 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. A senior reactor analyst performed a Phase 3 evaluation to determine the risk significance of this finding since it involved a postulated control room fire that led to control room evacuation and determined that the finding was of very low safety significance. The finding did not have a cross-cutting aspect since the performance deficiency was more than three years old and not indicative of current performance.

Inspection Report# : [2014008](#) (*pdf*)

Significance:  Nov 07, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Procedure Inadequacies Related to Cold Shutdown Repairs

The team identified a non-cited violation of Technical Specification 5.4.1.d for the failure to implement and maintain adequate written procedures covering fire protection program implementation. Specifically, the licensee failed to adequately label equipment and provide an adequate procedure for performing cold shutdown repairs required for post fire safe shutdown. Since the plant would already be stable in hot shutdown, no immediate compensatory or corrective actions were required to assure safety. The licensee was evaluating corrective actions. The licensee documented the deficiencies in Condition Report 00089130.

The failure to ensure that Procedure OFN RP-017A, "Hot Standby to Cold Shutdown from Outside the Control Room

Due To Fire," Revision 9, could be implemented as written was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality 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 (fire) to prevent undesirable consequences. The finding was evaluated for safety significance using NRC Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process." Since the finding was related to the ability to achieve safe shutdown and the plant would remain in stable hot shutdown, the finding screened to Green. This performance deficiency had a cross-cutting aspect in the area of human performance associated with documentation because the licensee did not prepare an accurate and up-to-date procedure that assured nuclear safety. Specifically, personnel did not verify that the steps in the revised procedure could be performed as written and that the components had proper labeling.

Inspection Report# : [2014008](#) (*pdf*)

Significance:  Oct 09, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Perform Operability Determinations on Degraded Boundaries

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 perform operability determinations on degraded boundaries with credited compensatory measures in accordance with Wolf Creek Procedure AP 26C-004, "Operability Determination and Functionality Assessment." Specifically, operations staff were stationing boundary watches to shut blocked open doors credited for maintaining operability of safety related components in the event of a high-energy line break in the turbine building. There was no reasonable assurance that an operator would be able to close these doors during a high-energy line break event. This violation is documented in CR-87666.

The failure to perform operability determinations on degraded high-energy line break boundaries is a performance deficiency. This performance deficiency is more than minor because it affected the configuration control 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 NRC Inspection Manual 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the finding was determined to be of very low safety significance because the finding is a deficiency in the qualification of the mitigating system and a licensee evaluation determined that affected system was maintained operable. The finding has a cross-cutting aspect in resources in the human performance cross-cutting area because the licensee failed to ensure that procedures were adequate to support nuclear safety. Specifically, Wolf Creek Procedure AP 10 104, "Breach Authorization," Revision 30, led operators to believe that operability determinations were not required for degraded boundaries and that a boundary watch was an adequate compensatory measure for a high-energy line break, despite clear guidance to the contrary in Procedure AP 26C-004.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Oct 09, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Include the Containment Coolers in a Test Program

The inspectors identified a violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to include the containment coolers in the heat exchanger inspection program that would demonstrate their leak tight integrity and capability to perform their safety function. During the period since the last problem and identification program inspection, the licensee had not implemented any means to assess the amount of corrosion in the tubing to support continued assurance of operability of containment coolers. Containment cooler operability

earlier this year was the subject of NRC inspectors' questions due to the lack of inspection and testing of the containment coolers. The containment coolers were subsequently hydrostatically tested to assure operability for a limited period of time. The licensee entered this finding in its corrective action program as CR-87668.

The failure to include the containment coolers in the heat exchanger inspection program to demonstrate their leak tight integrity and capability to perform their safety function is a performance deficiency. The deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and it adversely affects the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Therefore, the performance deficiency is a finding. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) For Findings At-Power," dated June 19, 2012. Using Appendix A, Exhibit 2, the inspectors determined that the finding was of very low safety significance (Green) because the finding was a design or qualification deficiency that was confirmed, not to result in loss of system operability or functionality. Any leaks that had occurring during this period were isolated or repaired such that the containment coolers were restored to operable status prior to exiting outages. In addition, the inspectors determined that the finding also had a potential to bypass the containment barrier, if containment pressure, in a loss of coolant accident, was greater than essential service water pressure in a containment cooler tube with a leak. Therefore, the inspectors evaluated the finding using NRC Inspection Manual Chapter 0609 Appendix H, "Containment Integrity Significance Determination process" dated May 6, 2004. It was determined that this is a Type B finding since there is no impact on delta core damage frequency. During Phase 1 screening, the finding does not screen out, because a pinhole leak can be considered a breach of a containment penetration. A Phase 2 assessment was performed assuming greater than a 30-day exposure. Essential service water (cooling water running through the containment cooler tubes) pressure was determined to be greater than the maximum containment pressure during a design basis accident. This would cause no leakage from containment to environment. Additionally, analysis shows any leakage would be less than 100 percent containment volume/day through a pinhole leak. Therefore, this resulted in a Green finding. This finding has a cross-cutting aspect of identification in the problem identification and resolution area, associated with individuals identifying issues completely in accordance with the corrective action program. Licensee staff failed to identify that the lack of non-destructive inspection for the containment coolers was an item that required corrective action program implementation.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Oct 09, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Incorporate LERs in OE Program

The inspectors identified a finding for the licensee's failure to follow the operating experience program's requirement to review external licensee event reports, and initiate a condition report for those potentially applicable to Wolf Creek. The licensee had discontinued reviewing external licensee event reports and writing condition reports, contrary to Procedure AP-20E-001, "Industry Operating Experience Program," Revision 25. Instead, the program relied upon the receipt of a third party's report prior to initiating a condition report. The inspectors determined that the third party does not submit a report for every nuclear power plant licensee event report. During the inspection, the licensee conducted an extent of condition and entered the issue into its corrective action program as CR-87670.

The licensee's failure to follow the operating experience program's requirement was a performance deficiency. This performance deficiency is more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the licensee's failure to review external licensee event reports and initiate condition reports when potentially applicable to Wolf Creek, per Procedure AP-20E-001 was a programmatic deficiency that could cause unacceptable conditions to go undetected. In accordance with Inspection Manual Chapter

0609, Attachment 4, “Initial Characterization of Findings,” dated June 19, 2012, and Inspection Manual Chapter 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” dated June 19, 2012, the team determined the finding was most appropriately associated with the Mitigating System Cornerstone, and was of very low safety significance (Green) because the finding did not represent an actual loss of function. This finding has a cross-cutting aspect of avoid complacency, because the licensee did not use error reduction tools to confirm that the third-party report contained all external licensee event reports.

Inspection Report# : [2014007](#) (*pdf*)

Significance:  Apr 10, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Conduct and Evaluate Simulator Testing in Accordance with ANSI/ANS 3.5-2009 (1998)

The inspectors identified a Green finding for WCNOG inadequately conducting and evaluating simulator performance testing in accordance with the standards of ANSI/ANS 3.5-2009 and ANSI/ANS 3.5-1998, “Nuclear Power Plant Simulators for Use in Operator Training and Examination.” Specifically, WCNOG did not adequately identify that the simulator responses during 2008 through 2014 tests of Transient (3), “Simultaneous Closure of All Main Steam Isolation Valves,” did not meet the acceptance criteria described in Section 4.1.4 of ANSI/ANS 3.5-2009 (or the 1998 edition), which if left uncorrected, could have resulted in negative training of licensed operators and call into question Wolf Creek’s ability to conduct valid licensing examinations with the simulator.

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 reference plant could cause negative training of licensed operators and call into question WCNOG’s ability to conduct valid licensing examinations with the simulator. Utilizing Inspection Manual Chapter 0609, “Significance Determination Process,” Attachment 4, Tables 1 and 2 worksheets, issued June 19, 2012, and flowchart block 14 of Appendix I, “Licensed Operator Requalification Significance Determination Process (SDP),” issued December 6, 2011, the finding was determined to have very low safety significance (Green), because the deficiencies were associated with simulator testing, modifications, 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 area of problem identification and resolution, identification, because WCNOG personnel did not implement a corrective action program with a low threshold for identifying issues. Specifically, this issue was first identified when the RETRAN-3D code analysis was first used in 2008 transient testing, and additional tests performed in 2008, 2009, 2010, and 2012 were opportunities to identify the performance deficiency; however, the issue was not entered into the corrective action program, a noticeable difference was not evaluated, a training needs assessment was not performed, and the process used to conduct simulator transient testing, as described in AI 30C-006, was not updated to include all of the minimum acceptance criteria described in the ANSI/ANS 3.5 standard. Hence, simulator issues expected to be identified during the testing process could potentially be missed by implementing the AI 30C-006 procedure, which did not include all of the minimum acceptance criteria described in the ANSI standard [P.1].

Inspection Report# : [2014005](#) (*pdf*)

Significance:  May 26, 2012

Identified By: NRC

Item Type: VIO Violation

Failure to Take Timely corrective Action to Preclude Repetition

The inspectors identified a violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” for the licensee’s failure to take corrective action to preclude repetition of system leaks due to water hammer events in the

essential service water system. Extensive inadequately evaluated corrosion in the system has led to multiple water-hammer-induced leaks of essential service water piping. These leaks were the subject of two previous violations issued by the NRC. The licensee failed to take timely corrective action to restore compliance. The licensee entered this finding in its corrective action program as condition report 53443.

The failure to preclude recurrence of water hammer in the essential service water system and the failure to take adequate corrective action to control internal pitting corrosion in essential service water system piping was a performance deficiency. The deficiency was more than minor because it is associated with the equipment performance 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. It is therefore a finding. Using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the team determined that the finding was of very low safety significance (Green) because the finding was a design or qualification deficiency that was confirmed not to result in loss of system operability or functionality. This finding has a cross-cutting aspect in the corrective action program component of the problem identification and resolution cross-cutting area because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance (P.1(d)). (Section 40A2.5.c)

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

Barrier Integrity

Significance:  Mar 28, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Station Boundary Watch for Opening Auxiliary Building Emergency Exhaust System Boundary Door

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, Drawings," associated with the licensee's failure to follow the requirements of Station Procedure AP 10-104, "Breach Authorization," Revision 32. Specifically, the licensee's failure initiate a breach permit and station a boundary watch when the auxiliary building emergency exhaust system boundary door 41015 was opened multiple times for transporting scaffolding from the turbine building to the auxiliary building. Opening this door without compensatory measures rendered the auxiliary building emergency exhaust system inoperable. The license entered this issue into their corrective action program for resolution as Condition Reports 92315 and 92630.

The licensee's failure to initiate a breach permit and implement required compensatory measures for when the auxiliary building emergency exhaust system boundary door 41015 was open was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the system, structure, and component and barrier performance attribute of the Barrier Integrity Cornerstone, and affected the associated cornerstone objective to ensure the radiological barrier functionality of the auxiliary building emergency exhaust system. Specifically, without a dedicated individual in constant communication with the control room, as required by AP 10-104, opening this door required entry of Technical Specification 3.7.13 Limited Condition of Operation Condition B. The longest period door 41015 was open was approximately one hour without the required compensatory measure. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Finding At-Power," dated June 19, 2012, inspectors determined that the finding screened as having very low safety significance (Green) because the finding only involved a degradation of the radiological barrier function provided for the auxiliary building. The finding has a cross-cutting aspect in the area of human performance associated with work management. Specifically, the organization failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority, including the

identification and management of risk commensurate to the work.

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

Significance:  Oct 09, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Preclude Repetition of a Significant Condition Adverse to Quality to Prevent Reactor Coolant System Leak

The inspectors reviewed a self-revealing violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Actions,” for failure to prevent repetition of a significant condition adverse to quality related to reactor coolant system boundary leakage on April 20, 2014. This violation is documented in CR-87667.

The failure to prevent the recurrence of a significant condition adverse to quality was a performance deficiency. This performance deficiency was more than minor because it affected the reactor coolant system equipment and barrier performance attribute of the Barrier Integrity cornerstone objective. Specifically, the failure to prevent the recurrence of high cycle fatigue, induced socket weld cracking resulting in reactor coolant system barrier leakage. The inspectors assessed the significance of the issue using IMC 0609, Appendix G Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings,” dated May 9, 2014. The finding was of very low safety significance (Green) because the finding did not cause a low temperature over pressurization, did not increase the potential for a freeze seal failure, did not involve steam generator nozzles dams, did not cause a boron dilution event, or degrade the ability to isolate a leak path. The performance deficiency occurred in 2003, this finding is not indicative of current plant performance and does not have a cross-cutting aspect.

Inspection Report# : [2014007](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

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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