

Wolf Creek 1

2Q/2013 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Station Procedures

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” which states, in part, “activities affecting quality shall be prescribed by procedures of a type appropriate to the circumstance and accomplished in accordance with these procedures.” Contrary to the above, the licensee failed to ensure procedures related to the boric acid corrosion control program were adequate and properly implemented. Specifically, prior to February 19, 2013, the licensee failed to: (1) resolve discrepancies within the boric acid corrosion control program procedure; (2) resolve discrepancies between the boric acid corrosion control program procedure and the boric acid leak management procedure; and (3) failed to track and resolve leakage for locations where health physics had installed drip catch containments, to review the Health Physics Drip Bag Log as part of the quarterly outside containment walkdown, and to add component locations to the program. Further, the licensee failed to periodically assess the effectiveness of the program on a refueling frequency. The violation was entered into the licensee’s corrective action program as Condition Report 65212.

The inspectors determined that the failure to recognize discrepancies between boric acid control procedures and the failure to follow boric acid program procedures was a performance deficiency. The performance deficiency was more than minor because it affected the Initiating Events Cornerstone attribute of procedure quality 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, and if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, failure to resolve discrepancies within procedures or track and resolve leak locations where health physics had installed drip catch containments had the potential to mischaracterize leaks or allow leaks to corrode safety related systems. Using Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” the finding was determined to be of very low safety significance (Green), because the finding was a procedure quality problem that did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee failed to ensure supervisory and management oversight of work activities, including procedure appropriateness and compliance, such that nuclear safety is supported [H.4(c)].

Inspection Report# : [2013003](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Leakage at Refueling Pool Cavity

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” which states, in part, “Measures shall be established to assure that conditions adverse to quality are promptly identified and corrected.” Contrary to the above, the licensee failed to identify and correct a condition adverse to

quality in a timely manner. Specifically, prior to February 19, 2013, the licensee failed to document the large area of boric acid leakage and corroded steel plates on the south primary shield wall of the containment refueling pool. The violation was entered into the licensee's corrective action program as Condition Report 64213.

The inspectors determined that the failure to promptly identify and evaluate a condition adverse to quality was a performance deficiency. The performance deficiency was more than minor because it affected the Initiating Events Cornerstone attribute of human performance 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, and if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, failure to implement corrective actions could result in increased leakage and further degradation of the safety system. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined that this finding was of very low safety significance (Green), because it was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee failed to define and effectively communicate expectations regarding procedural compliance and that personnel follow procedures [H.4(b)].
Inspection Report# : [2013003](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Update Station Procedures and Train Operators Regarding the Effects of Implemented Design Changes to the Turbine Control System

A Green self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for failure to properly update operating procedures and train operators on the effects of a recently installed modification. Specifically, procedures were not adequately revised to provide guidance for operating the new Westinghouse Ovation digital turbine controls. As a result, operators shifted operating modes at a power level that caused an 11 percent power increase due to the combined characteristics of the steam control valves and the turbine control unit. Additionally, operators were trained to shift control modes at low power levels, where minor transients occurred, but were not restricted from performing the shift at high power levels, where the transient could be more significant. This issue was entered into the licensee's corrective action program under Condition Report 68711.

Failure to update station operating procedures to provide adequate guidance for design changes, and failure to adequately train operators on those implemented design changes is a performance deficiency. The performance deficiency is more than minor because it affected the design control, procedure quality, and human performance attributes 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. Using Inspection Manual Chapter 0609, Appendix A, Checklist 1, "Initiating Events Screening Questions," and the inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in a reactor trip coincident with the loss of mitigation equipment. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance area of work control, because the licensee did not appropriately communicate and coordinate during activities in which interdepartmental coordination was necessary to assure plant and human performance. Specifically, Wolf Creek did not communicate and coordinate to ensure that procedure guidance and operator training adequately conveyed the operational impacts of shifting turbine control modes at different power levels. [H.3(b)](

Inspection Report# : [2013003](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Manage Reactivity Changes when Swapping Turbine Steam Admission Modes from Full to Partial Arc

Inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a for the failure to follow Conduct of Operations and Reactivity Management procedures. The inspectors reviewed an unplanned 11 percent power increase during a shift in turbine control modes, and identified that pre-job briefings did not adequately discuss expected plant response, operators did not take action to limit the power increase when an unexpected response was observed, and management was not adequately involved in decision making prior to continuing power ascension before the details of an apparent turbine control malfunction were fully understood. This issue was entered into the licensee's corrective action program under Condition Report 68711.

Failure to provide contingency actions for a greater than anticipated reactor transient in the pre-job reactivity brief, and continuing with power ascension without understanding the cause of the unexpected turbine control system behavior is a performance deficiency. The performance deficiency is more than minor because it affected the human performance attributes 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. Using Inspection Manual Chapter 0609 Appendix A, Checklist 1, "Initiating Events Screening Questions," and the inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in a reactor trip coincident with the loss of mitigation equipment. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance area of work practices because the licensee failed to communicate human error prevention techniques, such as holding pre-job briefings, self and peer checking, and proper documentation of activities such that work activities were performed safely. In addition, personnel proceeded in the face of uncertainty or unexpected circumstances. Specifically, in the first example control room operators pre-job reactivity brief was not appropriate commensurate with the risk of the assigned task; in the second example station personnel proceeded in the face of uncertainty. [H.4(a)]

Inspection Report# : [2013003](#) (pdf)

Significance:  Mar 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct Reactor Coolant System Pressure Boundary Leakage

The inspectors reviewed a self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure to promptly identify and correct the source of a reactor coolant system pressure boundary leak from about August, 2012, through February 5, 2013. On February 4, 2013, Wolf Creek was performing a routine boric acid walkdown of containment as part of Refueling Outage 19. A cracked weld spraying reactor coolant pump seal water was observed on the upstream side of valve BBV130, reactor coolant pump A seal water supply line drain valve. The licensee had attributed increased leakage in July to reactor coolant system leakage identified in early June 2012, past emergency core cooling system check valves, without conducting inspections to rule out pressure boundary leakage.

Wolf Creek's failure to promptly identify and correct the cause of reactor coolant system pressure boundary leakage is a performance deficiency. The issue is more than minor because, if left uncorrected, it could lead to a more significant safety concern in that leakage could increase over time. The inspectors assessed the significance of the issue using IMC 609, Appendix A, "Significance Determination Process for Findings at Power," Exhibit 1, "Initiating Events Screening Questions," Section A, "LOCA Initiators." The inspectors determined that the finding was of very low safety significance (Green) because after a reasonable assessment of degradation, the finding could not result in exceeding the reactor coolant system leak rate for a small loss of coolant accident and the finding would not have affected other systems used to mitigate a loss of coolant accident resulting in a total loss of their function (e.g., Interfacing System LOCA). The inspectors determined that this issue had a cross-cutting aspect in the human

performance cross-cutting area; Wolf Creek did not maintain long term plant safety by minimization of long-standing equipment issues to support safety. Specifically, the pressure boundary leakage was more difficult to identify because of concurrent check valve leakage into emergency core cooling systems, an intermittent but long-standing issue [H.2 (a)] (Section 4OA3).

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

Significance: G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Bases Change Causes Violation of Low Temperature Overpressure Protection Technical Specification

The inspectors identified a non-cited violation of Technical Specification 3.4.12, "Low Temperature Overpressure Protection System," for exceeding the maximum allowed number of centrifugal charging pumps capable of injecting to the reactor coolant system during low temperature operations. Inspectors found that Wolf Creek inappropriately made a technical specification bases change that allowed a second charging pump to be capable of injection, contrary to the wording of the associated technical specification. Wolf Creek submitted a request for a technical specification interpretation. In response, the NRC's Office of Nuclear Reactor Regulation stated that Technical Specification 3.4.12 allows one charging pump to be capable of injection during low temperature operations. This was entered into the Wolf Creek corrective action program as Condition Report 53012.

The failure to operate Wolf Creek in accordance with the technical specifications during low temperature conditions is a performance deficiency. The performance deficiency was more than minor because it impacted the Initiating Events Cornerstone objective of configuration control 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, "Significance Determination Process," Appendix G, Checklist 2, the inspectors determined this finding to be of very low safety significance, because it did not cause the loss of mitigating capability of core heat removal, inventory control, power availability, containment control, or reactivity control. Inspectors did not identify a cross-cutting aspect because the Technical Specification 3.4.12 Bases change occurred in 1999 and is not indicative of current licensee performance.

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

Significance: Y Aug 06, 2012

Identified By: NRC

Item Type: VIO Violation

Failure to provide adequate oversight of contractors during maintenance on the Startup Transformer

The team reviewed a self-revealing apparent violation of Technical Specification 5.4.1.a and Regulatory Guide 1.33 for the failure to follow procedures. Specifically, the electrical penetration seal and wiring assembly associated with the H1/CT4 and H2/CT5 current transformers installed in the startup transformer (XMR01) were replaced without insulating two of the splices, as required by Work Order 11-240360-006, Revision 3. This affected safety-related equipment on January 13, 2012, when the startup transformer experienced a spurious trip and lockout during a plant trip because the two uninsulated wires touched and provided a false high phase differential signal to the protective relaying circuit. The protective lockout caused a prolonged loss of offsite power to Train B equipment. The licensee's root cause analysis concluded that the Startup Transformer failure on January 13, 2012, was caused by the failure to provide adequate oversight of contractors. As a result, the licensee failed to identify that electrical maintenance contractors had failed to install insulating sleeves on wires that affected the differential current protection circuit. This issue was entered into the corrective action program as Condition Report 47653. The licensee's corrective actions included reworking the current transformer junction block to correct the missing insulation sleeves and updating station procedures to require oversight of contractors performing work on risk significant components.

This finding was more than minor because it affected the human performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions. This deficiency resulted in the failure of the fast bus transfer and the failure to maintain offsite power to safety-related loads during a reactor/turbine trip. The team performed the significance determination using NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, because it affected the Initiating Events Cornerstone while the plant was at power. The Phase 1 screened to a Phase 3 because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available; it was also potentially risk significant due to seismic external initiating event core damage sequences. A Senior Reactor Analyst performed a Phase 3 analysis using the Wolf Creek SPAR model, Revision 8.20. The performance deficiency was determined to impact all transient sequences, particularly those involving losses of essential service water and/or component cooling water that led to a reactor coolant pump seal loss of coolant accident. The loss of cooling water prevented successful room cooling for mitigation equipment as well as loss of containment recirculation phase cooling. The analyst used half (98.5 days) of the period since the last successful load transfer, since the actual time of failure could not be determined from the available information. Credit for recovery of limited non-vital loads on the startup transformer was given based on licensee troubleshooting results, however no recovery credit was available for room cooling, since the licensee had no preplanned alternate room cooling measures. The evaluation of external events showed a small contribution due to fires. The increase in the core damage probability (ICCDP) was determined to be 2.59E-5. This was a YELLOW significance.

The evaluation of large early release failures resulted in an ICLERP of 1.62E-7. This was a WHITE significance, which is superseded by the YELLOW significance of the ICCDP.

This finding had a human performance cross-cutting aspect associated with the work control component in that licensee personnel associated with the oversight of the work did not appropriately coordinate work activities, and address the impact of changes to the work scope consistent with nuclear safety [H.3(b)] (Section 40A5.2).

Inspection Report# : [2012009](#) (*pdf*)

Mitigating Systems

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Diesel Generator Pressure Switch Failed Due to Instrument Line Pressure Oscillations

A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, was identified on March 13, 2013. Specifically, the licensee replaced a jacket water pressure transmitter ten times, but failed to correct pressure oscillations that caused a fatigue failure of a pressure switch diaphragm, which rendered emergency diesel generator B inoperable. The inspectors concluded that the licensee ineffectively focused on correcting the apparent source of the pressure oscillations, but failed to evaluate the effects of the pressure cycles on components exposed to the same oscillations. This issue was entered into the licensee's corrective action program as Condition Report 65624 Failure to analyze the effects of pressure oscillations in the emergency diesel jacket water system on interfacing system components is a performance deficiency. The performance deficiency is 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 to prevent undesirable consequences. Using Inspection Manual Chapter 0609 Appendix A, "Significance Determination Process for Findings at Power", and determined that the finding screens as very low safety significance (Green) because the finding does not meet any criteria outlined in the Exhibit 2, Section A. Specifically the finding did not represent a loss of system safety function and did not exceed its technical specification allowed outage time of 72 hours. The inspectors determined that the

finding had a cross-cutting aspect in the area of problem identification and resolution evaluations because the licensee failed to ensure that issues that potentially affect nuclear safety are fully evaluated and addressed in a timely manner. [P.1(c)]

Inspection Report# : [2013003](#) (pdf)

Significance: G Apr 29, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify the Cause and Take Corrective Action to Preclude Repetition of a Diesel Generator Functional Failure

The inspector identified a NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to determine the cause of a significant condition adverse to quality and take corrective action to preclude repetition. On October 22, 2009, the plant received multiple alarms for the A EDG due to actuation of speed control relays while in a standby condition. This condition would have prevented an automatic start of the A EDG. The licensee's handling of this issue had the following problems: the failure was entered into the CAP, but the licensee failed to recognize that this was a significant condition adverse to quality; the initial evaluation failed to identify that the cause of the failure was a circuit design error, and therefore the licensee failed to implement appropriate action to prevent recurrence; the extent of condition review failed to identify that the Turbine Driven Auxiliary Feedwater Pump (TDAFWP) was also affected; prior indications of the failure mechanism had not been entered into the CAP; and multiple examples of failure to follow the corrective action process contributed to not finding the actual cause sooner. This was entered into the licensee's CAP as CR 65323. The failure to determine the cause of a significant condition adverse to quality and take corrective action to preclude repetition was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective. Specifically, the failure to determine the cause and take effective corrective action for electrical noise that impacted the EDG speed switches resulted in the degraded condition continuing to exist for over two years after the initial failure. The inspector determined that the finding was of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), but the corrective actions that were implemented were sufficient to ensure that the SSC maintained its operability and functionality.

The NRC determined the finding had a cross cutting aspect in the human performance area associated with decision-making - systematic processes because the licensee did not make safety-significant or risk-significant decisions using a systematic process when they evaluated the cause of the diesel generator failure [H.1(a)].

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

Significance: G Mar 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Initiate a Condition Report and Determine Extent of Condition for Emergency Diesel Generator Head Stud Failure

The inspectors identified a Green, NCV of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions." The licensee did not initiate a condition report (CR) for a hardware failure of an emergency diesel generator structural component identified in October 2006. On October 15, 2006, while performing planned maintenance on the emergency diesel generator B, a broken cylinder head stud was discovered while disassembling the number four cylinder. None of the other seven studs on that cylinder showed any visible damage, so maintenance and engineering personnel assumed a surface nick was the cause of the failure and simply replaced the bolt under Work Order WO 06-288926-000. No CR was generated, as such there was no formal cause evaluation, no hardware failure analysis to specify the mode of degradation, or any other consideration of extent of condition for potential common cause failures was implemented. On January 7, 2013, a broken cylinder head stud was found during maintenance on emergency diesel generator B. An independent laboratory determined that the stud had failed due to high cycle fatigue. Subsequent analysis of the stud

that failed in 2006 confirmed the same failure cause.

Failure to initiate a condition report, determine the cause and take actions to prevent recurrence for a broken emergency diesel generator cylinder head stud, a significant condition adverse to quality, is a performance deficiency. The performance deficiency is more than minor and therefore a finding because, if left uncorrected, it could lead to a more significant safety concern; specifically, because the failure to evaluate extent of condition was later confirmed to have left additional degraded or failed studs undetected for over six years. The inspectors screened the finding using Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," Section A. The finding screened as Green because it was a design or qualification issue where affected system, structures, or components maintain their operability or functionality. No cross-cutting aspect was assigned associated with the 2006 events because the primary causes of this finding were not indicative of current licensee performance. Specifically the inspectors observed proactive decision making by engineering management in the 2013 bolt failure including condition reporting, hardware failure analyses, and extent of condition testing missing from the 2006 event were promptly carried out with no impetus from government or industry regulators (Section 4OA3).

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

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

Failure Rates Exceed Twenty Percent for Biennial Requalification Exam

The inspectors reviewed a self-revealing finding associated with licensed operator performance on the biennial requalification exam. Specifically, 19 of 52 operators failed at least one portion of the biennial requalification examinations. As an immediate corrective action, the licensed operators who failed any portion of the examinations were remediated (i.e., the licensed operators were retrained and successfully retested) prior to returning to shift. The licensee entered this issue into their corrective action program as Condition Report 59491.

The inspectors determined that the licensed operator failures constituted a performance deficiency because licensed operators are expected to operate the plant within acceptable standards of knowledge and abilities demonstrated through periodic testing. The inspectors determined that the finding was more than minor in accordance with Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because the performance deficiency was associated with the Mitigating Systems Cornerstone attribute of human performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, 19 of 52 licensed operators failed to demonstrate a satisfactory understanding of the required knowledge and abilities required to safely operate the facility under normal, abnormal, and emergency conditions. The inspectors determined that the finding could be evaluated using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix I, "Licensed Operator Requalification Significance Determination Process." The finding was of very low safety significance (Green) because the finding was related to the requalification exam results, did not result in a failure rate of greater than 40 percent, and the majority of the failed licensed operators were remediated (i.e., the licensed operators were retrained and successfully retested) prior to returning to shift. Two licensed operators had not completed the remediation process and remained off shift at the end of the inspection period. The finding has a cross-cutting aspect in the area of human performance associated with resources, because the licensee failed to ensure that personnel were adequately trained to assure nuclear safety. Specifically, the licensee failed to use sufficiently challenging weekly written evaluations during the weekly training cycles to assess licensed operator knowledge.

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

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

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

The inspectors identified a non-cited violation of 10 CFR 55.53, "Conditions of License," for the failure of the licensee to ensure that licensed operators met all the conditions of their licenses in order to be considered an active watch stander. Specifically, the licensee failed to ensure that six licensed operator reactivations met the complete plant tour requirement specified in 10 CFR 55.53(f) prior to license reactivation and subsequent performance of licensed operator duties. The licensee entered this finding into their corrective action program as Condition Report 58233.

Failure to ensure that all authorized individuals who operate the controls of the facility met the conditions of their licenses as defined in 10 CFR 55.53 was a performance deficiency. This finding was more than minor because it was associated with the human performance attribute of the Mitigating System Cornerstone and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, licensed operators that do not properly complete the requirements of 10 CFR 55.53(f) prior to resuming control room watchstanding duties may commit operator errors that could cause mitigating systems to fail to respond properly. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the team was directed to use Appendix I, "Licensed Operator Requalification Significance Determination Process," to process the violation. However, the team determined that NRC Inspection Manual Chapter 0609, Appendix I, could not be used to process this finding due to a recent revision to the appendix. Based on direction from headquarters and regional management to use NRC Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the finding was determined to have very low safety significance because a prior similar violation's significance bounded this finding's significance. The prior similar violation occurred at Comanche Peak (NCV 05000445/2011004-02), and was determined to have very low safety significance per the last revision of NRC Manual Chapter 0609, Appendix I, because more than 20 percent of the license reactivation records reviewed contained these deficiencies. This finding was determined to have a cross-cutting aspect in the area of human performance, associated with resources, because the licensee failed to ensure complete, accurate, and up-to-date procedures were available and adequate to assure nuclear safety. Specifically, the licensee failed to specify in a procedure what plant areas must be included to meet the requirements of a complete plant tour.

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

Significance: G Sep 28, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Operability Evaluations for a Single A/C Cooling its Associated Train

On August 30, 2012, inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for an operability evaluation that failed to adequately evaluate the operability of safety-related electrical equipment. On July 9, 2012, the inspectors identified that train B air conditioning unit SGK05B had a flow rate of 1,028 cfm below that of its design flow rate of 11,500 cfm during a flow rate surveillance test on June 8, 2011. Wolf Creek performed an operability evaluation when the inspectors questioned the test results. The inspectors found that the evaluation contained non-conservative errors in cooling coil capacity specifications, incorrect assumptions for heat conducted into the switchgear rooms, unaccounted for latent and sensible heat sources, and a single failure that was not considered. Wolf Creek then expanded the operability evaluations to both trains, was performing cause evaluations on the repetitive operability evaluations, and planned to reconstitute the design basis for the system. This was captured in condition reports 54791, 54865, 55712, 55994, 56020, 56253, 56014, 56966, and 28252.

The failure to perform an operability evaluation that accurately reflected the plant design was a performance deficiency. The performance deficiency is more than minor because it impacted the design control attribute of the Mitigating Systems Cornerstone and affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences because the licensee had to re-perform

the evaluations to demonstrate that adequate capability existed. Using Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” this finding was determined to be of very low safety significance because operability evaluations were ultimately able to demonstrate adequate heat removal capability for the Class IE electrical equipment rooms. The inspectors identified the cause of the finding had a crosscutting aspect in the area of problem identification and resolution because Wolf Creek did not thoroughly evaluate the problem such that the resolutions address causes and extent of conditions, as necessary. Specifically, the reduced flow rate was a narrow focus of the evaluation and did not consider ongoing system design problems in evaluating the losses of margin [P.1.c]. (Section 1R15).

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

Significance: G Jul 09, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Safety-Related Fan Flow Rate Acceptance Criteria Reduced Below Design Basis

On July 9, 2012, the inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for inappropriately reducing the vital air conditioning unit fan flow rate test acceptance criteria to a value less than that used in the Updated Safety Analysis Report and supporting calculations. The inspectors identified that the train B air conditioning unit fan SGK05B improperly passed its surveillance test, procedure STS PE-16B, on June 8, 2011, at 10,472 cfm when the design flow rate is 11,500 cfm. A flow rate of 11,500 cfm was specified in all of Wolf Creek’s design basis calculations. Reviewing the history, the inspectors found condition report 2001-3149 led to changing the test acceptance criteria on January 15, 2002. In that change, Wolf Creek misapplied standards for filtration and charcoal absorber units to the control building air conditioning units in order to justify reducing the minimum flow rate acceptance criteria by 10 percent for procedures STS PE-16A and -16B, “Train A[B] Class IE Elect System A/C System Flow Rate Verification,” Revision 2. Wolf Creek initiated condition report 54791 and assessed the reduced flow rate impact in operability evaluation GK-12-011.

Changing surveillance test acceptance criteria by incorrectly applying standards while lowering the acceptance criteria below the minimum required flow rate is a performance deficiency. The performance deficiency is more than minor because it impacted the design control attribute of the Mitigating Systems Cornerstone and affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” this finding was screened to a Green because operability evaluation GK-12-011 demonstrated that the train B vital air condition unit had approximately 0.7 percent margin to cool the train B batteries, battery chargers, switchgear, and inverters. Therefore, there was not a loss of operability or functionality of a risk significant component. This issue did not screen as significant for fires, floods, or seismic events. The inspectors found the cause of the finding was not indicative of current performance because the inappropriate test procedure changes were made approximately 11 years ago (Section IR22).

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

Significance: G 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 4OA2.5.c)

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

Barrier Integrity

Significance: N/A Jun 30, 2013

Identified By: NRC

Item Type: VIO Violation

Failure to Maintain Complete and Accurate Housekeeping Records

The inspectors identified a Severity Level IV violation of 10 CFR 50.9, "Completeness and Accuracy of Information," for the Wolf Creek Nuclear Generating Station's failure to maintain complete and accurate records required by a license condition. Title 10 CFR 50.9 requires, in part, that information required by statute, orders, or license conditions to be maintained by the licensee shall be complete and accurate in all material respects. Contrary to the above, between October and December 2008, the licensee failed to maintain records required by License Condition 2.C.5 that were complete and accurate in all material respects. Specifically, the Housekeeping Inspection Card for the spent fuel pool area indicated that the inspection had been completed when security access logs indicate that the individual that completed the record had not entered the area. The NRC investigation determined that the assigned individual did not walk down the assigned area, and did not assign a designee to do so. (EA-013-084)

The failure to maintain records required by License Condition that are complete and accurate in all material respects in accordance with 10 CFR 50.9 was a violation. Traditional enforcement applies because it involved a violation that impacted the regulatory process. In accordance with the Enforcement Manual, Section 2.11.F, since this violation was the result of a willful action, it is more than minor and is being treated as a Severity Level IV violation.

Inspection Report# : [2013003](#) (pdf)

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Control Room Air Conditioning Technical Specification Surveillance Requirements

The inspectors identified a non-cited violation for failure to perform surveillance testing specified in Technical Specification 3.7.11, "Control Room Air Conditioning System." The activities the licensee was crediting to meet the requirement to verify heat removal capability were not adequate to meet the intent of the requirement. Specifically Wolf Creek was crediting their Generic Letter 89-13 heat exchanger reliability program actions to visually clean and inspect the condenser tubes to meet a heat exchanger performance test requirement which required measuring heat removal capability. Wolf Creek entered Surveillance Requirement 3.0.3 for the missed surveillance. Based on analyses by operations, engineering, and risk assessment personnel it was determined that reasonable expectation

existed that air conditioning units SGK04A and SGK04B were still fully capable of meeting their specified safety function. Therefore, the air conditioning units were “Operable but Non-Conforming,” and it was appropriate to consider the limiting condition for operation met for a delay time not to exceed the surveillance period of 18 months. The licensee entered this issue into their corrective action program as Condition Report 54906.

The inspectors determined that the failure to perform sufficient testing to satisfy a technical specifications surveillance requirement is a performance deficiency. The performance deficiency was more than minor because it impacted the structures, systems, and components and barrier performance attribute for the control room and auxiliary building and the Barrier Integrity Cornerstone objective to provide reasonable assurance that the radiological barrier remains functional. Using Inspection Manual Chapter 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," the finding was determined to be of very low safety significance (Green) because it did not represent an actual degradation of the barrier function of the control room to protect the operators inside from smoke or a toxic atmosphere. The issue has no cross-cutting aspect associated with it because it is not indicative of current licensee performance.

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

Emergency Preparedness

Occupational Radiation Safety

Significance:  Sep 28, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow ALARA Planning Procedures

The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.4.1.a, resulting from the licensee’s failure to follow ALARA planning procedures. Nonsafety-related gaskets were used, inadequate walkdowns were conducted, and work activities were not planned in the most efficient manner. Consequently, the collective dose for Radiation Work Permit 11-2000 was approximately 7.626 person-rem instead of the planned 2.1 person-rem. Corrective actions were still being evaluated.

The failure to implement ALARA planning in accordance with procedural guidance was a performance deficiency. This finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective, in that, it caused increased collective radiation dose for occupational workers. Additionally, the finding was similar to example 6(i) in Appendix E to Inspection Manual Chapter 0612, “Power Reactor Inspection Reports – Examples of Minor Issues.” This example states that an issue is more than minor if it results in a collective dose greater than 5 person-rem, and the actual dose exceeds the estimated dose by greater than 50 percent. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding had very low safety significance because, although the finding involved ALARA planning and work controls, the licensee’s latest 3-year rolling average collective dose was less than 135 person-rem. This finding had a crosscutting aspect in the human performance area, associated with the work practices component because the ALARA Committee provided no feedback on the quality or comprehensiveness of the planning of Radiation Work Permit 11-2000, and radiation protection and maintenance supervisors failed to provide adequate oversight of daily ALARA activities [H.4(c)] (Section 2RS02).

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

Significance: G Sep 27, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Radiation Protection Procedures

The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.4.1.a, which resulted from a worker failing to follow radiation protection procedures. A radiation worker, in a high noise area, received an electronic alarming dosimeter dose rate alarm, but failed to immediately stop work, notify co-workers, leave the area, and contact health physics as instructed by the radiation work permit and procedures. In response, the licensee investigated the occurrence, coached the individual on human performance tool usage, and restricted the individual's access to the radiological controlled area. The licensee implemented actions to consider the use of dosimeters with enhanced sound, vibration alarms, and/or visual alarms. This issue was documented in the licensee's corrective action program as condition report 56059.

The failure to follow radiation protection procedures was a performance deficiency. The performance deficiency was more than minor because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Additionally, the performance deficiency was similar to an example in Appendix E to Inspection Manual Chapter 0612, "Power Reactor Inspection Reports – Examples of Minor Issues." Example 6(h) states that an issue is more than minor if an individual continues to work in a high radiation area after receiving an electronic dosimeter alarm without taking the prescribed procedural actions. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding had very low safety significance because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This finding had a crosscutting aspect in the human performance area, resources component, because the licensee failed to ensure adequate equipment, such as volume enhanced alarming dosimeters, were available to assure nuclear safety [H.2(d)] (Section 2RS01).

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

Public Radiation Safety

Security

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

Miscellaneous

Last modified : September 03, 2013