

Wolf Creek 1

4Q/2010 Plant Inspection Findings

Initiating Events

Significance:  Dec 07, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Boric Acid Leak on Instrument Lines to Reactor Coolant System

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," involving the licensee's failure to identify, document, and evaluate sources of boric acid leakage.

During a boric acid walkdown and containment closeout tour on December 7, 2010, the inspectors identified a boric acid leak in an instrument line to the reactor coolant system loop 2 flow transmitters which had not been previously identified and documented by the licensee. As such, the licensee failed to accomplish the requirements of procedure AP 16F-001, "Boric Acid Corrosion Control Program," Revision 6A, step 6.1, which stated, in part, that sources of boron leakage shall be identified and documented in the applicable corrective action document. The licensee entered this finding into their corrective action system as Condition Report 31003 and replaced the leaking union.

The finding was determined to be more than minor because it was associated with 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. The inspectors used Inspection Manual Chapter 0609, and determined the finding was of very low safety significance (Green) because the issue would not result in exceeding the technical specification limit for identified reactor coolant system leakage or affect other mitigating systems resulting in a total loss of their safety function. The inspectors also determined that the finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee did not have a sufficiently low threshold in order to identify boric acid leaks during walkdowns [P.1.(a)] .

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Nov 04, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures for Establishing Feedwater Preheat

The inspectors identified a noncited violation of Technical Specification 5.4.1.a, "Procedures," for Wolf Creek Procedures GEN 00-003, "Hot Standby to Minimum Load," and SYS AE-200, "Feedwater Preheating During Plant Startup and Shutdown," being inadequate by failing to require maximum feedwater preheating. This could lead to a reactor trip caused by steam generator level oscillations attributable to low feedwater temperature. This was a contributing factor in the October 17, 2010, reactor trip. A temporary change was made to the procedures that cautioned operating crews to maintain maximum feedwater preheating. This issue was entered in the licensee's corrective action program as Condition Reports 29845 and 29846.

The inadequate procedural direction to establish maximum feedwater preheating is a performance deficiency. The performance deficiency is more than minor, therefore a finding, because it is associated with the Initiating Events Cornerstone attribute of procedure quality and it affects the 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 evaluated the significance of this finding using Inspection Manual Chapter 0609.04. This finding was determined to be of very low safety significance since the finding contributed to the likelihood of a reactor trip; however, it did not contribute to the likelihood that mitigation equipment or functions would not be available. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because Wolf Creek failed to institutionalize internal and external operating experience by changing plant procedures [P.2(b)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Nov 04, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures to Ensure Proper Main Feed Pump Speed During Startup

The inspectors identified a noncited violation of Technical Specification 5.4.1.a, "Procedures," for Wolf Creek Procedures GEN 00-003, "Hot Standby to Minimum Load," and SYS AE-121, "Turbine Driven Main Feedwater Pump Startup," being inadequate by failing to direct control room operators to establish a main feedwater pump speed that will allow the feed bypass regulating valves to control in the 60 to 80 percent open range, prior to raising power from 8 to 16 percent. Feed bypass regulating valve throttle characteristics are highly non-linear below this range which complicates manual and automatic control. This was a contributing factor in the October 17, 2010, reactor trip. A temporary change was made to the procedures that cautioned operating crews to ensure earlier establishment of optimal feedwater bypass control valve position. This issue was entered in the licensee's corrective action program as Condition Reports 29845 and 29846.

The inadequate procedural direction to establish optimal bypass valve position at the correct time during the startup is a performance deficiency. The performance deficiency is more than minor, therefore a finding, because it is associated with the Initiating Events Cornerstone attribute of procedure quality and it affects 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 evaluated the significance of this finding using Inspection Manual Chapter 0609.04. This finding was determined to be of very low safety significance since the finding contributed to the likelihood of a reactor trip; however, it did not contribute to the likelihood that mitigation equipment or functions would not be available. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the operating experience component because Wolf Creek failed to institutionalize internal operating experience by changing plant procedures [P.2(b)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Conditions to Open a Main Steam Isolation Valve that Resulted in a Feedwater Isolation

A self-revealing noncited violation of Technical Specification 5.4.1.a, Procedures, was identified for the failure to provide a procedure to establish appropriate conditions to open a main steam isolation valve in Mode 4 which resulted in an excessive steam generator level swell and feedwater isolation. On March 5, 2010, Wolf Creek commenced a plant heatup following a shutdown to Mode 4 for a nuclear instrument repair. Main steam isolation valve A was opened at approximately 12:07 a.m. and steam generator A level rapidly increased 28 percent and tripped the P-14 setpoint which caused a feedwater isolation. The cause was attributed to an inadequate procedure for determining valve differential pressure or steam demand prior to opening a main steam isolation valve. This issue is captured in Condition Report 23938. For corrective action, Wolf Creek plans to install high accuracy local gauges to measure valve differential pressure.

The inspectors determined that the failure to provide a procedure that established the conditions necessary to open a main steam isolation valve without causing an excessive steam generator swell was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the Initiating Events Cornerstone attribute of procedure adequacy 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 operation. Using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors concluded the finding screened to Green because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. No crosscutting aspect was identified because there was no aspect that significantly contributed to the event.

Inspection Report# : [2010004](#) (*pdf*)

Significance:  Dec 31, 2009

Identified By: NRC

Item Type: VIO Violation

Failure to Correct Vessel Head Vent Path

The inspectors identified a cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," due to an inadequate vent path for the reactor vessel head. The inadequate vent path resulted in the formation of voids in the reactor vessel head during Refueling Outage 17. Failure to ensure an adequate vent path in the reactor vessel head was the subject of a noncited violation in NRC Inspection Report 05000482/2008004. During and after Refueling Outage 16, Wolf Creek initiated a root cause evaluation and corrective actions to prevent occurrence. When one of the possible root causes was disproven in Refueling Outage 17, no additional action was taken to determine the cause of the vessel head vent blockage. However, the licensee could not exclude blockage in the piping. This issue was entered into the corrective action program and the licensee plans to conduct a more thorough inspection of the piping during the next refueling outage. This issue is being tracked by the licensee as Condition Report 22501.

The inspectors determined that the failure to provide adequate vessel head vent path to prevent gas accumulation in the reactor vessel during depressurized plant operations was a performance deficiency. The inspectors determined that this finding, which was associated with the Initiating Events Cornerstone, was more than minor because if left uncorrected, it would have become a more significant safety concern. Specifically, without an adequate vent path the reactor vessel does not have an effective means of relieving noncondensable gases to prevent a loss of reactor coolant system inventory. The inspectors evaluated this finding using Inspection Manual Chapter 0609, Appendix G, Attachment 1, and determined it be of very low safety significance based upon the demonstrated availability of mitigating systems and the flooded reactor cavity inventory. The inspectors determined the cause of the finding had a problem identification and resolution aspect in the corrective action program. Specifically, Wolf Creek's corrective actions were not successful to address the vent path blockage in a timely manner [P.1(d)].

Inspection Report# : [2009005](#) (pdf)

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: VIO Violation

Failure to correct component cooling water valve closures

The inspectors identified a cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," involving Wolf Creek's failure to correct the cause of the reactor coolant pump thermal barrier component cooling water heat exchanger outlet valves stroking closed on high flow. Specifically, between 2001 and 2009, Wolf Creek experienced repeated cases of the reactor coolant pump thermal barrier component cooling water heat exchanger outlet valves stroking closed during component cooling water pump swaps and during isolations of the radioactive waste evaporators. Wolf Creek reinitiated evaluation of the issue after the inspector's questions but did not review the impact on the operators' ability to open the valves given the valves' circuit breakers opening. Repeated throttle valve adjustments have not been successful in stopping the valve closures. This issue and the corrective actions are being tracked by the licensee in Condition Report 2007 002074 and has corrective action pending to modify valve circuitry but it has not been implemented.

The failure to correct a condition adverse to quality of ensuring reactor coolant pump seal cooling as described in the Updated Safety Analysis Report is a performance deficiency. The finding is more than minor because it is associated with the equipment performance attribute for the Initiating Events Cornerstone; and, it 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 finding was determined to be of very low safety significance because the finding would not result in exceeding the Technical Specification limit for identified reactor coolant system leakage and would not have affected other mitigation systems resulting in a total loss of the seal cooling safety function. This finding is being cited because the licensee failed to establish measures to assure this condition adverse to quality was promptly identified and corrected. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because, even though numerous instances of valve closures occurred since the first noncited violation, Wolf Creek downgraded the condition report. Using nonconservative assumptions, the licensee consistently viewed this issue as not having a risk impact because seal injection was not simultaneously lost. [H.1.b]

Inspection Report# : [2009002](#) (pdf)

Inspection Report# : [2009005](#) (pdf)

Mitigating Systems

Significance:  Dec 16, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain Licensed Operator Examination Integrity

The inspectors identified a Green noncited violation of 10 CFR Part 55.49, "Integrity of Examinations and Tests," for the failure of the licensee to ensure that the integrity of the written examinations and the operating tests administered to licensed operators was maintained. Seven licensed operators received two dynamic scenarios for their operating tests that had been previously administered to other licensed operators in previous weeks for the 2009 operating tests. Also, six licensed operators for week 4 and 12 licensed operators for week 5 received written examinations during the 2010 examinations that contained more than 50 percent repeat questions from the previous week examinations. These failures resulted in a compromise of examination integrity because they exceeded the 50 percent overlap defined by ACAD 07-01, "Guidelines for the Continuing Training of Licensed Personnel," for this portion of the examination and operating tests, but did not lead to an actual effect on the equitable and consistent administration of the examination. This issue was entered into the licensee's corrective action program as Condition Report 00028854.

The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. - 6 - Enclosure

The performance deficiency is more than minor, and therefore a finding, 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 finding could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge on the biennial examinations and operating tests could be a precursor to a significant event if undetected performance deficiencies develop. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance (Green) because the finding resulted in a compromise of the integrity of operating test dynamic scenarios and written examinations and compensatory actions were not immediately taken in 2009 (for the operating tests) and 2010 (for the written examinations) when the compromise should have been discovered. Because the equitable and consistent administration of the exam was not actually impacted by this compromise, it is being characterized as a Green noncited violation. This finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee did not ensure that the associated procedure used to create the examinations and operating tests was complete, accurate, and up to date to ensure that the 50 percent maximum overlap standard was not exceeded [H.2(c)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Dec 09, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Account for Water Hammer Stresses in Essential Service Water System Calculations

The inspector identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion III, having very low safety significance for the licensee's failure to ensure that applicable regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures and instructions. Wolf Creek failed to properly account for essential service water piping membrane stress and impact loads as required by the 1974 ASME Code, Section III, paragraphs ND-3112.4 and ND-3111. Specifically, the licensee's design calculations for the essential service water system did not account for the pressure fluctuations caused by a known column closure water hammer phenomena which occurs during a loss of offsite power or load sequencer testing. Wolf Creek has written Condition Report 33253 and plans to address the issue.

The licensee's failure to account for the pressure fluctuations caused by a known column closure water hammer phenomena in the design calculations for the essential service water system was a performance deficiency. This performance deficiency was more than minor and therefore a finding because it was associated with the human performance attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective of ensuring the

availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspector determined the significance of the finding using IMC 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 represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time. This finding has a crosscutting aspect in the human performance cross-cutting area, associated with the decision making component, because the licensee used non-conservative values without adequate engineering justification to conclude that essential service water system piping met minimum wall thickness criteria for operability [H.1 (b)].

Inspection Report# : [2010005](#) (pdf)

Significance:  Nov 24, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct a Condition Adverse to Quality

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify voiding conditions in the component cooling water and residual heat removal system piping. The licensee failed to promptly identify the presence of voids in both the component cooling water and residual heat removal systems despite unexpected component cooling water pump auto starts and unexpected audible water hammer and minimum flow valve (EJ FCV-610) cycling during component cooling water and residual heat removal pump surveillances.

This finding was more than minor because the failure to promptly identify conditions adverse to quality associated with the component cooling water and residual heat removal systems is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in a loss of operability. The finding had a crosscutting aspect in the human performance, decision making component, because the licensee failed to use conservative assumptions during the evaluation of the pressure oscillations exhibited during the component cooling water pump starts.

Inspection Report# : [2010008](#) (pdf)

Significance:  Nov 24, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Procedure for Fill and Vent of the Component Cooling Water System

The inspectors identified a self-revealing noncited violation of Technical Specification 5.4.1, "Procedures," for failure to maintain procedures required for filling and venting of the component cooling water system. The licensee failed to ensure that the procedures for filling and venting the component cooling water system were adequately written to prevent gas accumulation and voids to form in the system.

This finding was more than minor because the failure to maintain an adequate procedure for filling and venting the component cooling water system is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in a loss of operability. No crosscutting aspect was assigned, as this condition was not reflective of current licensee performance.

Inspection Report# : [2010008](#) (pdf)

Significance:  Nov 24, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform an Adequate Operability Evaluation

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the failure to follow the requirements of Procedures AP 28-001, "Operability Evaluations," and AP 26C-004, "Technical Specification Operability," associated with deficiencies resulting from the presence of voiding in the train A residual heat removal heat exchanger. This condition resulted in the failure to adequately address the impact of the voided condition for the high head pumps and the heat removal capacity of the heat exchanger.

This finding is more than minor because it is associated with the Mitigating Systems Cornerstone attribute of equipment performance and adversely affects the objective to ensure equipment availability and reliability. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the issue screened as very low risk significant since the finding did not represent a loss of system safety function. The inspectors determined that this finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to thoroughly evaluate a similar problem such that extent of condition of the voiding was considered and the cause was resolved.

Inspection Report# : [2010008](#) (*pdf*)

Significance:  Nov 23, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct Inadequate RHR Fill and Vent

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify and take corrective actions to address inadequacies in the residual heat removal system fill and vent procedure. The licensee failed to perform corrective actions to incorporate minimum flow rates required to sweep air out of the residual heat removal heat exchangers into the system fill and vent procedure during performance of revisions incorporating previous operating experience and corrective actions associated with NRC inspections.

This finding is more than minor because it affected the Mitigating Systems Cornerstone attribute of design control for ensuring the availability, reliability, and capability of safety systems. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," this finding was determined to be of very low safety significance because the voided heat exchanger was a design or qualification deficiency confirmed not to result in loss of operability. The inspectors determined that the finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action component because the licensee staff evaluation of previous Performance Improvement Request 2002-2765 was not thorough enough to result in inclusion of minimum flows necessary to sweep voids out of the residual heat removal heat exchanger.

Inspection Report# : [2010008](#) (*pdf*)

Significance:  Nov 04, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Steam Generator Hi-Hi Turbine Trip

The inspectors identified a noncited violation of Technical Specification 5.4.1.a, "Procedures," for Wolf Creek Procedure ALR 00-112A, "Steam Generator Level Hi-Hi Turbine Trip," being inadequate when reactor power exceeds the capabilities for the auxiliary feedwater system to maintain adequate steam generator inventory after P-14 actuation. This contributed to the operators' attempt to perform a controlled shutdown instead of a reactor trip, thereby causing an automatic reactor trip. The licensee incorporated guidance in their startup training to trip the reactor when inadequate feedwater flow exists after P-14 actuation. This issue was entered into the licensee's corrective action program as Condition Report 29540.

The inadequate procedural direction after P-14 actuation is a performance deficiency. The performance deficiency is

more than minor, and therefore a finding, because it is associated with the Mitigating Systems Cornerstone attribute of human performance and it affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors evaluated the significance of this finding using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." This finding was determined to be of very low safety significance since the finding does not represent a loss of system safety function, nor does the finding represent actual loss of safety function for single train for a greater time than permitted by technical specifications. This finding had a crosscutting aspect in the area of human performance associated with the resources component because Wolf Creek failed to validate that the procedure would be successful in stabilizing the plant [H.2(c)].

Inspection Report# : [2010005](#) (pdf)

Significance:  Nov 04, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Simulation Facility Fidelity

The inspectors identified a noncited violation of 10 CFR 55.46(c)(1)(i), "Simulator Fidelity," in that the licensee's simulation facility did not have adequate fidelity to simulate steam generator level oscillations that occur during startup and shutdown after a loss of feedwater preheat, thereby creating the possibility for negative training. Specifically, two constants that are used in the model for the Westinghouse 7300 steam generator level control cards were improperly programmed in the simulator. The licensee changed the constants in the simulator model and initiated actions to ensure accurate low-power steam generator oscillation modeling. This issue was entered into the licensee's corrective action program as Condition Report 29541.

The failure to have a properly modeled simulation facility is a performance deficiency. The performance deficiency is more than minor, therefore a finding, because it is associated with the Mitigating Systems Cornerstone attribute of human performance and it affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors evaluated the significance of this finding using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." This finding was determined to be of very low safety significance because the finding neither represents a loss of system safety function, nor does it represent actual loss of safety function for single train for a greater time than permitted by technical specifications. This finding had a crosscutting aspect in the area of human performance associated with the resources component because Wolf Creek did not ensure the simulation facility was accurately modeling plant behavior [H.2(d)].

Inspection Report# : [2010005](#) (pdf)

Significance:  Oct 01, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design of Component Cooling Water Safety/Nonsafety Isolation

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, which states, in part, that "measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions." Specifically, as of October 8, 2010, the licensee failed to incorporate design seismic requirements into the design calculations and actual system operation. This finding was entered into the licensee's corrective action program as Condition Report 00028237.

The team determined that the failure to adequately analyze the isolation between the safety related and nonsafety-related portions of the component cooling water system was a performance deficiency. This finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design basis analysis did not ensure that the affected train of component cooling water would perform its required functions after the failure of nonsafety-related component cooling water piping. The inspectors evaluated the issue using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." This finding affected the Mitigating Systems Cornerstone because

seismic protection was degraded. The inspectors determined that this finding represented the degradation of equipment and functions specifically designed to mitigate a seismic event and that during an earthquake the deficiency would degrade one train of component cooling water, a system that supports a safety system or function. Therefore, this finding was potentially risk significant to seismic initiators and a Phase 3 analysis was required. A Region IV senior reactor analyst performed the Phase 3 significance determination. The change in core damage frequency was calculated to be 7.0×10^8 indicating that this finding was of very low safety significance (Green). The dominant risk sequence included a seismic initiating event, loss of offsite power, loss of reactor coolant pump seal cooling, and a failure of high pressure recirculation. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2010007](#) (pdf)

Significance:  Oct 01, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Tornado Damper Testing

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, which states, in part, that “measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.” Specifically, as of October 8, 2010, the licensee failed to assure that the identified emergency diesel generator room and the service water pump room tornado damper testing deficiency was effectively corrected. This finding was entered into the licensee’s corrective action program as Condition Report 00028185.

The inspectors determined that the failure to implement this corrective action was a performance deficiency. This finding was more than minor because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, failure to implement this corrective action would have resulted in a failure to periodically test tornado dampers required to protect both the emergency diesel generator room and the essential service water pump room ventilation system. In accordance with Manual Chapter 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” a significance determination screening was performed and determined 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 team determined that there was a crosscutting aspect in the area of human performance resources because the licensee failed to provide complete, accurate, and up-to-date work packages [H.2(c)].

Inspection Report# : [2010007](#) (pdf)

Significance:  Oct 01, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Auxiliary Feedwater Pump Suction Line Break Analysis and Design

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, which states, in part, that “measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.” Specifically, as of October 8, 2010, the design calculations associated with the auxiliary feedwater system line break analysis was not consistent with the actual system operation. This finding was entered into the licensee’s corrective action program as Condition Report 00006250.

The team determined that the failure to adequately analyze a postulated failure of the piping from the condensate storage tank to the auxiliary feedwater pumps was a performance deficiency. This finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design basis analysis did not ensure that the turbine-driven auxiliary feedwater pump would perform its required functions after the failure of nonsafety-related piping from the condensate storage tank. In accordance with NRC Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," a significance determination screening was performed and determined this finding

was of very low safety significance (Green) because it 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 licensee's operability evaluation demonstrated that the auxiliary feedwater system was operable. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2010007](#) (pdf)

Significance:  Oct 01, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Diesel Generator Specified Rating did not Address Engine Operation at Design Basis Extreme Meteorological Temperature Conditions

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, which states, in part, that “measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures and instructions.” Specifically, prior to September 29, 2010, the licensee failed to ensure that the design bases inputs in the emergency diesel generator equipment specification were bounded by expected operational values. The licensee failed to evaluate the effects of the identified design basis maximum local meteorological conditions on the rating for the emergency diesel generators which could have affected the capability of safety-related equipment to respond to initiating events. This finding was entered into the licensee’s corrective action program as Condition Report 00028695.

The team determined that failure to properly incorporate the licensing design basis for extreme local meteorological temperature conditions as a design input in the emergency diesel generator equipment specification was a performance deficiency. This finding was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the design basis analysis did not ensure that the diesel generators could perform their design safety function at the maximum design temperature. In accordance with NRC Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," a significance determination screening was performed and determined this finding was of very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2010007](#) (pdf)

Significance:  Oct 01, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Requirements to Operating Procedures for the Transfer of Residual Heat Removal and Containment Spray Suction to the Containment Recirculation Sumps

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, which states in part, that “measures shall be established to assure that applicable regulatory requirements and the design bases are correctly translated into specifications, drawings, procedures, and instructions.” Specifically, on September 22, 2010, two out of two operating crews failed to satisfy the minimum time requirement for the transfer of suction of the residual heat removal pumps and the containment spray pumps to the containment recirculation sumps following a large break loss of coolant accident with the worst single active failure as described in Table 6.3 12 of the Updated Safety Analysis Report. This finding was entered into the licensee’s corrective action program as Condition Report 00028276.

The team determined that the failure to translate design requirements into operating procedures was a performance deficiency. This finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of design control and affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to translate design requirements into Procedure EMG ES 12, “Transfer to Cold Leg Recirculation.” In accordance with NRC Inspection Manual Chapter 0609.04, “Phase 1 - Initial Screening and Characterization of

Findings,” a significance determination screening was performed and determined that this finding was of very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding had a crosscutting aspect in the area of human performance resources because the operating personnel were not trained to complete the transfer to cold leg recirculation within the minimum time to ensure the equipment was available to assure nuclear safety [H.2(b)].

Inspection Report# : [2010007](#) (pdf)

Significance: G Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct Degraded Vital Switchgear Cooler Wiring

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Conditions Adverse to Quality,” involving Wolf Creek’s failure to identify and correct degraded wiring in the train A vital switchgear air conditioning unit. On August 5, 2010, the SGK05A unit tripped when it blew a fuse. The cause of the blown fuse was found to be a wire that shorted to its terminal box, which is mounted to the compressor. A limited number of wires were replaced and the unit was returned to service. A work order to troubleshoot stated that all wires were inspected and the repair work order stated to inspect for additional damage. The inspectors questioned degraded cables in the terminal box that were not replaced. On August 26, 2010, Wolf Creek re-inspected the wiring and found 15 wires that exceeded the 10 percent insulation loss acceptance criterion and 1 wire that exceeded 50 percent. Vibration of flex conduit was also found to be causing wire degradation. This issue is captured in Condition Reports 27564, 27209, 27218, 27231, and 27237. Wolf Creek has planned more thorough and frequent wiring inspections.

The failure to identify and correct the condition adverse to quality of ensuring wiring insulation meets its acceptance criteria is a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The finding is determined to be of very low safety significance because it did not represent an actual loss of safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event initiators. The finding has a crosscutting aspect in the human performance area associated with the resources component. Specifically, the August 6 troubleshooting and repair work orders did not include instructions to inspect all potentially affected wiring with a specific method to assess insulation loss in order to repair all the damaged wires. Inspection Report# : [2010004](#) (pdf)

Significance: G Sep 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Identify and Evaluate Degraded Piping in the Train A Essential Service Water System

The inspector identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee's failure to properly evaluate a condition adverse to quality involving train A of the essential service water system. The cause and extent of condition of the pitting corrosion of the essential service water piping was not fully addressed by the licensee due to inadequate analysis and lack of engineering justification for the assumptions used to evaluate the degradation. As a result, the licensee was unable to ensure the pitting degradation did not reduce essential service water pipe wall thickness below the minimum allowed ASME code specifications. This resulted in train A of the essential service water system being declared inoperable from 2:20 p.m. until 10:21 p.m. on December 9, 2010, while measurements of the piping wall thickness were obtained. The licensee entered this issue into the corrective action program as Condition Report 18785.

The failure to properly evaluate the degraded condition of the essential service water piping was a performance deficiency. The inspector determined this finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems Cornerstone , and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to events to prevent undesirable consequences. The inspector determined the significance of the finding using IMC 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 represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time. This finding had a crosscutting aspect in the human performance cross-cutting area, decision making

component, because the licensee did not use conservative assumptions in its decision making when they initially used non-conservative values without adequate engineering justification to conclude that the train A essential service water piping met minimum wall thickness criteria for operability [H.1 (b)].

Inspection Report# : [2010005](#) (pdf)

Significance:  Sep 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Corrosion Mechanism in Accordance with Code Case N513

On September 15, 2010, the inspectors identified a Green noncited violation of 10 CFR 50.55a(b)(5) for failing to implement the requirements of Code Case N513-2, Section 2.0(e). On June 29, 2010, Wolf Creek discovered a through-wall leak of a 30 inch essential service water pipe. The flaw was evaluated using ASME Code Case N513-2. Code Case N513, Section 2.0(e) required the flaw be re-examined every 30 days unless a flaw growth evaluation is prepared to justify re-examination every 90 days. The evaluation is required to include corrosion rate and corrosion mechanism. The inspectors reviewed the engineering disposition for the flaw and did not find a discussion of the corrosion mechanism or a justification of the corrosion rate. The inspectors reviewed independent laboratory analyses of removed Wolf Creek piping samples that stated that microbiologically influenced corrosion was likely and that the corrosion likely progressed through-wall at a high rate. On September 30, 2010, an engineering disposition was created in response to Condition Report 28077 which included a corrosion evaluation and established a much higher corrosion rate. Key in that corrosion evaluation was the use of empirical data from testing of known flaws which showed a corrosion rate between -4 mils per year to 29 mils per year. The flaw was reexamined after 90 days and minimal growth was found.

The failure to comply with the requirements of ASME Code Case N513-2, Section 2.0(e) was considered a performance deficiency. The finding is greater than minor because the failure to perform timely and adequate evaluations of degraded, nonconforming, and unanalyzed conditions for operability, if left uncorrected, would have the potential to lead to a more significant safety concern. The finding is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the significance of this finding using Phase 1 of Inspection Manual Chapter 0609.04, and determined that the finding was of very low safety significance (Green) because the issue did not result in a loss of operability or functionality, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program component because operations and engineering personnel failed to thoroughly evaluate problems such that the resolutions addressed the cause and extent of condition [P.1(c)]

Inspection Report# : [2010005](#) (pdf)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Resolve Degraded Conditions in a Timely Manner

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly correct degraded or nonconforming conditions in that the conditions were not corrected at the first available opportunity or appropriately justify a longer completion schedule. Some examples of affected degraded or nonconforming conditions included degraded atmospheric relief valve discharge line silencer, essential service water system water hammer events and internal corrosion, and 23 items on the Operability Evaluation Database that had not been corrected prior to the start of the last refuel outage. As corrective actions for this issue, the licensee implemented interim procedural guidance and initiated Condition Report 27071 to evaluate the adequacy of tracking methods used for degraded, nonconforming, or unanalyzed conditions. In addition, the licensee initiated a review of work requests, condition reports, and other items for degraded, nonconforming, or unanalyzed conditions and is assessing the justification for delayed implementation of these corrective actions.

This issue 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 to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the finding has a crosscutting aspect in the area of human performance associated with the component of resources because the licensee failed to provide adequate procedures to assure timely resolution of degraded or nonconforming conditions [H.2(c)].

Inspection Report# : [2010006](#) (*pdf*)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Unqualified Scaffolding Erected Near Safety-Related Equipment

The inspectors identified a noncited violation of Technical Specification 5.4.1.a for failure to properly implement Procedure AP 14A-003, "Scaffold Construction and Use," Revision 17, when scaffolding was erected near operable safety-related equipment. On July 14, 15, and 28, the inspectors identified a total of four instances where the minimum separation distance between scaffolding and safety-related components was less than the minimum allowed by procedure and an approved engineering evaluation to justify the deviation was not performed. The licensee entered the issue into its corrective action program as Condition Reports 26752 and 27010, corrected each scaffolding deficiency, and performed comprehensive walkdowns of all scaffolding around safety-related structures, systems, and components.

The deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The finding was associated with the Mitigating Systems Cornerstone. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined the finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program because the licensee did not take appropriate corrective actions to address previously identified scaffolding construction issues in a timely manner [P.1(d)].

Inspection Report# : [2010006](#) (*pdf*)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: FIN Finding

Failure to Adequately Monitor Control Room Deficiencies

The inspectors identified a finding for the failure to follow Procedure AI 22A-001, "Operator Work Arounds/Burdens/Control Room Deficiencies," Revision 8, to adequately identify, document, and track control room deficiencies associated with instruments and controls to ensure proper prioritization and timely corrective actions. Specifically, inspectors observed that the licensee had approximately 52 "WR" (work request) buttons on the control boards indicating that work requests had been initiated to correct problems on instruments and controls. However, not all deficiencies were logged, and some of the deficiencies had existed for years without correction or justification. The licensee initiated Condition Report 27034 to document and evaluate this concern.

The deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern, in that, the deficient condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The finding is associated with the Mitigating Systems Cornerstone. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with numerous equipment issues and associated human performance aspects that might impact equipment operation. Using Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the

finding is determined to have very low safety significance because there was no adverse impact to plant equipment. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the component of corrective action program because the licensee did not identify issues completely, accurately, and in a timely manner commensurate with their safety significance [P.1(a)].

Inspection Report# : [2010006](#) (pdf)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update an Operability Evaluation

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures and Drawings,” for the failure to implement Procedure AP 26C-004, “Technical Specification Operability,” Revision 20, to adequately evaluate the operability of a degraded essential service water system. Specifically, operations and engineering personnel failed to adequately evaluate the operability of the essential service water system when relevant new information was identified that challenged a previously performed operability determination and which challenged the reasonable expectation for operability. Condition Report 27288 was initiated to evaluate the failure to perform adequate operability determinations.

The issue was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The finding is associated with the Mitigating Systems Cornerstone. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of human performance associated with resources because the licensee failed to provide complete, accurate, and up-to-date procedures for performing operability evaluations [H.2(c)].

Inspection Report# : [2010006](#) (pdf)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: VIO Violation

Failure to Perform Adequate Evaluation for Significant Conditions

The inspectors identified a cited violation 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” because the licensee failed to perform an adequate evaluation to determine the cause of loss of offsite power induced water hammers and internal corrosion in the essential service water system and did not take corrective actions to preclude repetition of additional water hammer events and system leaks. Specifically, the licensee performed an apparent cause evaluation instead of a root cause evaluation as required, and the licensee’s evaluation did not consider metallurgical evaluations that were performed outside the corrective action program. The inspectors found that the licensee had not corrected a previous NCV 05000482/2009007-03, “Failure to Correctly Screen ESW Piping Leaks for Significance,” which resulted in the licensee failing to perform a root cause evaluation. Because the licensee failed to restore compliance within a reasonable time after NCV 05000482/2009007-03 was identified, this violation is being cited in a Notice of Violation in accordance with Section VI.A.1 of the NRC’s Enforcement Policy. The licensee’s corrective action to this cited violation was to initiate Condition Reports 27212, 26466, and 27075, to evaluate and correct the identified conditions, to start a root cause evaluation and, separately, to evaluate the licensee’s failure to properly respond to NCV 05000482/2009007-03.

The issue was more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of

nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the component of corrective action program because the licensee failed to thoroughly evaluate problems such that the resolutions address causes and extent of conditions [P.1 (c)]

Inspection Report# : [2010006](#) (pdf)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Determine if a Deficiency Existed in the Ultimate Heat Sink

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to follow the requirements of Procedure AP 26C-004, “Technical Specification Operability,” Revision 20. Specifically, Wolf Creek Generating Station failed to confirm if a deficiency existed with the ability of the ultimate heat sink to perform its safety function after delaying the 5 year scheduled dredging of the channel. The licensee initiated Condition Report 27080 and performed an operability determination to evaluate the deficiency.

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and it affected the 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, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because licensee personnel failed to identify a potential deficiency in the ultimate heat sink in a timely manner [P.1(a)].

Inspection Report# : [2010006](#) (pdf)

Significance:  Jul 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Notice of Unusual Event Due to Loss of Both Emergency Diesel Generators

The inspectors reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” for failure to identify a degraded equipment condition in December 2006. As a result, the emergency diesel generator system experienced a failure on October 22, 2009, which caused the plant to make a notice of unusual event emergency declaration. Licensee personnel missed an opportunity to identify the condition because they did not thoroughly evaluate a surveillance failure and post-mortem testing data available in December 2006.

The finding is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and it affected the 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, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. A crosscutting aspect was identified in the problem identification and resolution in that the licensee did not thoroughly evaluate problems such that the resolution addressed causes [P.1(c)].

Inspection Report# : [2010006](#) (pdf)

Significance:  Jul 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Information into a Procedure

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to translate criteria from the atmospheric relief valve accumulator leakage calculation into proceduralized leakage criteria. Specifically, engineering personnel did not translate the calculated design basis leakage criteria and the required minimum pressure to start the test into the procedure. The licensee entered this in to the corrective action program as Condition Report 26771, and the licensee was developing plans to revise the leakage criteria in the procedure.

This issue was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone and affected the objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because licensee personnel failed to take appropriate corrective actions to previously identified problems [P.1(d)].

Inspection Report# : [2010006](#) (*pdf*)

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain an Adequate Flooding Analysis for Auxiliary Feedwater Trains

The inspectors identified a green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," after Wolf Creek failed to provide adequate design control measures for verifying the adequacy of the flooding analysis for the auxiliary feedwater pipe rooms 1206 and 1207. Wolf Creek failed to identify piping that was seismically unqualified and that if ruptured could potentially overwhelm the floor drains. Wolf Creek re-analyzed the piping and determined it would not rupture during an earthquake. Flooding of the room could have caused all three of the auxiliary feedwater pump suction pressure transmitters to fail and inhibit automatic swap to essential service water. The licensee placed this issue in their corrective action program as Condition Report 26050.

The inspectors determined that the incorrect calculation assumption in the flooding analysis of record was the performance deficiency. This finding was determined to be more than minor because it impacted the Mitigating Systems Cornerstone attribute of the design control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the deficiency was confirmed not to result in loss of operability or functionality. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee's evaluation focused on the probability of equipment failure leading to a flooding event rather than the stated design basis of the facility [P.1(c)].

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Lack of Acceptance Criteria Allows Degraded EDG Power Supply to Remain in Service

The inspectors identified a violation of Technical Specification 5.4.1.a, "Procedures," for the failure of maintenance personnel to provide an adequate work order that included critical acceptance criteria for the emergency diesel generator B. On October 22, 2010, emergency diesel generator A failed because excessive power supply voltage

ripple caused its speed switch to actuate while in standby. Emergency diesel generator B also failed voltage ripple tests on October 27, 2009. On October 27, 2009, voltage ripple was at 2,015 mV, but no acceptance criteria were specified in Work Order 09-321599-000. Corrective action was not taken until March 2010 and subsequent evaluation of the issue did not identify the lack of acceptance criteria in the work order. The licensee placed this issue into the corrective action program as Condition Report 26651.

The inspectors determined that the failure to replace a power supply that was degraded below its acceptance criteria was the performance deficiency. This finding is more than minor because it affected the Mitigating Systems Cornerstone attribute of availability and reliability and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the deficiency was confirmed not to result in loss of operability or functionality. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because several work groups failed to question the March 17, 2010, results and initiate a condition report [P.1(a)].

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Nonsafety Power Supply Causes Failure of Emergency Diesel Generator A

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of the licensee to ensure the design of the emergency diesel local annunciator power supply circuit such that its failure would not cause failure of the associated emergency diesel generator. On October 22, 2009, Wolf Creek was defueled when the control room received annunciators for emergency diesel generator A. The power supply for the local annunciators had input enough noise or voltage spikes on to the safety related power wires to cause the speed switch to actuate while the engine was in standby. This inhibited engine start. The power supply was replaced and emergency diesel generator A was returned to service on October 23, 2009. Condition Report 21039 examined this failure but failed to identify that the vendor's circuit analysis did not consider voltage ripple as a failure mode and that the requirements of IEEE 384-1974 were not met. The nonsafety related power supply was not supposed to be able to cause the failure of the safety related emergency diesel generator. The licensee placed this issue into the corrective action program as Condition Reports 25663, 24867, and 25479.

The inspectors determined the failure to ensure that the licensing basis for the emergency diesel generators was being met to be the performance deficiency. This finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of human performance and it affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because emergency diesel generator A was out of service for less than 24 hours. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee failed to evaluate this failure mode against the vendor's circuit analysis [P.1(c)].

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Procedure for a Main Feed Pump Trip

The inspectors identified a Green noncited violation of Technical Specification 5.4.1.a, "Procedures," for the failure of Wolf Creek control room personnel to follow procedures for a main feedwater pump trip. During a review of the posttrip data and operator statements, the inspectors noted that control room operators took manual control and reset main feedwater Pump A, which was not in accordance with station procedures. This issue was entered into the licensee's corrective action program as Condition Report 24011.

This finding was greater than minor because it was associated with the Mitigating Systems Cornerstone attribute of human performance and it affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors evaluated the significance of this finding using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," and screened the finding to Phase 2 because the finding represents a loss of auxiliary feedwater actuation system safety Function g. The finding screened to Phase 3 because of the failure to start of both motor-driven auxiliary feedwater pumps. The senior reactor analyst performed a Phase 3 analysis and concluded that the finding was Green because the probability of an initiator occurring within any 10-second exposure time is approximately 3E-7. Additionally, auxiliary feedwater pumps would have been automatically started on lo-lo steam generator level if required. The inspectors also determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience because Wolf Creek failed to communicate relevant operating experience to affected internal stakeholders [P.2(a)].

Inspection Report# : [2010002](#) (pdf)

Significance:  Mar 10, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Goals and Monitor for a(1) Offgas Radiation Monitor GERE0092

The inspectors identified a noncited violation of 10 CFR 50.65 for failure to establish goals per paragraph (a)(1) to monitor the performance of the main condenser offgas radiation Monitor GERE0092. Multiple failures occurred which exceeded the monitoring goals and the function was not moved to 50.65(a)(1) status for corrective action and goal setting. Wolf Creek engineering subsequently evaluated the issues and determined that the function should have been moved to a(1) for goal setting. The licensee entered this issue in their corrective action program as Condition Report 24423.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events. The inspectors evaluated the significance of this finding using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that this finding is of very low safety significance, Green. Specifically, the associated function (SP-04) to detect primary to secondary leakage and then isolate the steam generator blowdown flow path does not result in a loss of any safety function. The inspectors determined that this finding has a crosscutting aspect in the problem identification and resolution area associated with corrective action program because Wolf Creek failed to take appropriate corrective actions to address the system reliability issue and adverse radiation monitor performance trends in a timely manner, commensurate with safety significance and complexity [P.1(d)].

Inspection Report# : [2010002](#) (pdf)

Significance:  Mar 03, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded Fire Barriers for Auxiliary Feedwater

The inspectors identified a noncited violation of License Condition 2.C(5)(a) for degraded fire seals that separated redundant safe shutdown equipment. Specifically, silicone foam and ceramic fiber board seals separating the auxiliary feedwater trains from the turbine building and the condensate storage tank valve house were degraded so that they no longer provided a 3-hour rated fire barrier. The licensee entered the finding into the corrective action program as Condition Report 23828.

The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of protection against external events and affected the cornerstone objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," under Fire Barrier Degradation, Table A2.2, the finding was associated with Moderate B degradation due to the seal not being in a tested or evaluated condition. Using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," in supplemental screening for fire confinement findings, the finding screens as Green due to exposing Fire Area A33 featuring an automatic full area water-based suppression system. No crosscutting aspect was

assigned as this condition was not reflective of current licensee performance.

Inspection Report# : [2010002](#) (*pdf*)

Significance:  Mar 03, 2010

Identified By: NRC

Item Type: FIN Finding

Failure to Perform Adequate Posttrip Review

The inspectors identified a Green finding for the failure to adequately implement the posttrip review procedure following a reactor trip caused by low steam generator water levels on March 2, 2010. Specifically, Wolf Creek's posttrip evaluation was not adequate because it failed to identify or evaluate anomalous equipment performance associated with the main feedwater pump that caused the trip. Additionally, the inspectors determined that the Wolf Creek's posttrip review failed to identify that some aspects of operator response to the trip of the main feedwater pump were not in accordance with station procedures. Wolf Creek evaluated the individual issues and deficiencies listed above and entered them into the corrective action program as Condition Reports 23932, 23966, 24043, 23982, and 23981.

This finding was greater than minor because the information omitted from the posttrip review was associated with the human performance 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. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," this finding was determined to be of very low safety significance since the finding does not represent a loss of system safety function, nor does the finding represent actual loss of safety function for single train for a greater time than permitted by technical specifications. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because Wolf Creek failed to fully evaluate plant computer data and operator statements associated with the March 2, 2010, reactor trip [P.1(c)].

Inspection Report# : [2010002](#) (*pdf*)

Significance:  Nov 12, 2009

Identified By: NRC

Item Type: VIO Violation

Failure to Correct Discolored Boric Acid Deposits

The inspectors identified a cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to take action to stop leakage from the base of the refueling water storage tank or evaluate the leakage and wastage for acceptability. Specifically, the licensee did not take actions to prevent recurring discolored boric acid deposits for approximately 11 years. Failure to correct leakage from the refueling water storage tank base was the subject of a noncited violation in NRC Inspection Report 05000482/2007006. This issue was entered into the licensee's corrective action program as Condition Report 22866.

The failure to implement corrective actions for the refueling water storage tank leakage was a performance deficiency. The inspectors determined this issue impacted the Mitigating Systems Cornerstone and was greater than minor because if left uncorrected, the failure to correct the presence of boric acid leakage could become a more significant safety concern in that continued wastage could impact tank operability. Using the Phase 1 worksheets in Inspection Manual Chapter 0609.04, "Significance Determination Process," the finding was determined to have very low safety significance because it did not result in a system or component being inoperable and it did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors identified a crosscutting aspect in the area of human performance associated with resources. Specifically, Wolf Creek did not maintain long term plant safety minimizing corrective maintenance deferrals and this long standing equipment issue [H.2(c)].

Inspection Report# : [2009005](#) (*pdf*)

Significance:  Mar 03, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inoperable Containment Cooler Condensate Monitoring System

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, due to all containment cooler drip pans being degraded such that the containment cooler condensate monitoring system could not perform its design basis safety function to quantify reactor coolant system leakage into the containment atmosphere. Wolf Creek initiated Condition Report 24005 and Work Order 10-325741-000 to clean and repair the drip pans.

This issue is more than minor because it was associated with the equipment performance aspect of the Barrier Integrity Cornerstone and impacted the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, it affected the licensee's ability to detect a reactor coolant system leak. The inspectors used Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," to analyze the significance of this finding. The inspectors concluded the finding is of very low safety significance because the condition was not related to pressurized thermal shock. The inspectors also determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because Wolf Creek failed to identify adverse postwork conditions after the coolers received maintenance in the 2009 refueling outage [P.1(a)].
Inspection Report# : [2010002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance:  Oct 21, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Have Procedures to Prevent Draining Radioactive Systems into Nonradioactive Systems

The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.4.1.a for failure to implement written procedures to prevent draining and venting radioactive systems into nonradioactive systems and prevent unplanned releases of radioactivity into the environment. On October 21, 2009, an auxiliary building operator inadvertently connected a hose carrying radioactive water to a hose that was routed into the auxiliary building nonradioactive sump. Consequently, the operator drained an estimated 800 to 1,000 gallons of reactor coolant into the nonradioactive auxiliary building sump which transferred its radioactive contents to the turbine building sump. When the contaminated turbine building sump attempted to transfer liquid radioactive waste to the non-radioactive wastewater retention basin, radiation monitor RE95 alarmed and terminated the discharge due to the Hi-Hi radioactivity setting of $7.25E-5$ uCi/ml. The licensee immediately implemented a decontamination recovery plan. This event was entered into the licensee's corrective action program as Condition Reports 20995, 20999, and 29295.

The inspectors determined that failure to have procedures to prevent draining and venting radioactive systems to nonradioactive systems was a performance deficiency. The finding was more than minor because it impacted the program and process attribute of the Public Radiation Safety Cornerstone, and it adversely affected the cornerstone objective of ensuring adequate protection of public health and safety from exposure to radioactive material released into the public domain. Using the Public Radiation Safety Significance Determination Process, the inspectors determined this finding to be of very low safety significance because this was not a failure to implement the effluent program, and it had no impact on public dose. In addition, this finding has a crosscutting aspect in the area of Human

Performance related to the personnel work practices component. Specifically, the licensee failed to use self- and peer-checking human error prevention techniques and then proceeded in the face of uncertainty when unexpected plant conditions were known [H.4(a)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Oct 21, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Have Adequate Procedures for Meteorological Monitoring

The inspectors identified a noncited violation of Technical Specification 5.4.1.a for failure to have adequate procedures for maintaining meteorological monitoring systems functional. The inspectors determined that procedures did not exist for maintaining the functionality or to declare one or more channels of wind instrumentation out of service pursuant to Technical Requirement 3.3.12. Consequently, both channels of the 10 meter wind direction instrumentation were not functional between April and October 2009. The licensee developed additional guidance for determining functionality of the instruments and immediately required the meteorological data to be reviewed on a more frequent basis to ensure validity. The licensee entered this issue into the corrective action program as Condition Report 00029337.

The failure to have procedures to maintain meteorological monitoring functional is a performance deficiency. This finding is more than minor because it was associated with the Public Radiation Safety Cornerstone attribute of program and process and affected the cornerstone objective, in that, the failure to have adequate procedures to maintain meteorological monitoring instrumentation functional has the potential to impair public dose assessments of routine and accidental radioactive effluent releases. Using the Public Radiation Safety Significance Determination Process, the inspectors determined this finding to be of very low safety significance because this was not a failure to implement the effluent program, and it had no impact on public dose. This finding has a crosscutting aspect in problem identification and resolution area associated with the corrective action component because the licensee failed to implement a low threshold for completely and accurately identifying issues with the meteorological monitoring instrumentation in a timely manner [P.1(a)].

Inspection Report# : [2010005](#) (*pdf*)

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Nov 24, 2010

Identified By: NRC

Item Type: FIN Finding

Evaluations and Operability Assessments

The inspectors reviewed the licensee evaluations associated with the component cooling water and residual heat removal systems following the identification of the voiding condition. During the review of the licensee evaluations, the inspectors identified inadequate assumptions within the calculations and operability determinations. The assumptions included; the failure to include the effects of the voided condition in the residual heat removal system on the high head safety pumps; the use of nonconservative assumptions during the determination of the size of the initial void contained in the residual heat removal heat exchanger; and the initial troubleshooting following the start of the standby component cooling water pump during a low discharge pressure condition focused on the potential failure of

the pressure switch, when the licensee had sufficient information that the pressure switch operated as expected. In addition, during the inspection the inspectors observed challenges in the licensee's ability to understand abnormal operating conditions, in that, the licensee had multiple opportunities to identify the presence of voids in the residual heat removal and component cooling water systems prior to the actual discovery of the adverse conditions. These included missed opportunities during review of licensee and industry operating experience, indications of flow oscillations during start of system components, and abnormal cycling of flow control valves.

Inspection Report# : [2010008](#) (*pdf*)

Significance: N/A Jul 30, 2010

Identified By: NRC

Item Type: FIN Finding

Wolf Creek Generating Station Biennial PI&R Inspection Summary

The team concluded that the corrective action program at Wolf Creek Generating Station was generally performing in a satisfactory manner to ensure safe plant operations. However, as previously discussed in the past four NRC assessment letters, Wolf Creek's ability to thoroughly evaluate and prioritize problems such that the resolutions effectively address the causes and extent of conditions is of concern. Wolf Creek Generating Station's efforts to reverse the trend of substantive crosscutting issues in problem identification and resolution areas have not shown to be effective.

The team identified a number of issues that the licensee's staff had previous opportunities to identify. The team also identified instances in which the licensee takes actions outside of the corrective action program in order to evaluate or correct issues of concern. The inspectors noted several examples where degraded or nonconforming conditions were not corrected in a timely manner and no evaluation had been performed that justified delayed correction of the issue. In addition, the team identified examples where the licensee has taken ineffective corrective actions, including one example of a cited violation based on the licensee's failure to take corrective actions to restore compliance within a reasonable time after a violation had been identified.

The team determined that the licensee adequately evaluated industry operating experience for relevance to the facility, and entered applicable items in the corrective action program. And, based on focus group interviews, the team concluded that the licensee had a strong safety conscious work environment. Workers stated they felt they could raise safety concerns without fear of retaliation.

Inspection Report# : [2010006](#) (*pdf*)

Last modified : March 03, 2011