

Wolf Creek 1

4Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Jul 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Cause of Component Cooling Water Valve Closures

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 the cause of the reactor coolant pump (RCP) thermal barrier component cooling water heat exchanger outlet valves stroking closed on high flow. Specifically, between 2001 and 2007, Wolf Creek experienced repeated cases of the RCP thermal barrier component cooling water heat exchanger outlet valves stroking closed when two component cooling water pumps are started during train swaps. Wolf Creek evaluated the issue after inspector questioning but did not review the impact of the valves stroking closed during design basis events or accidents and the operators' ability to open them given the valves circuit breakers opening. Wolf Creek has further condition reports open on this finding.

The failure to identify and correct the condition adverse to quality of ensuring RCP 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 is 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 their safety function. The cause of the finding has problem identification and resolution crosscutting aspects in the area of corrective action because Wolf Creek did not thoroughly evaluate the issue such that the resolution addressed the extent of conditions given multiple opportunities documented in the corrective action program (P.1(c)).

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Jul 07, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Inspections of Circulating Water Pump Auto Transformers

A self-revealing finding for failing to identify degraded circulating water pump auto transformers during inspections in April 2007. Specifically, Wolf Creek failed to adequately inspect and identify signs of overheating and degradation during inspection of the excitation auto transformers for the circulating water pumps. Consequently, the unidentified degraded condition resulted in the circulating water Pump A tripping and an automatic turbine load reduction on May 25, 2007. Wolf Creek has replaced the failed auto transformer and is planning a modification to increase the size of the transformers to reduce overheating.

The failure to perform adequate inspections of the circulating water Pump A excitation auto transformer was considered a performance deficiency. The finding is more than minor because it is associated with the Initiating Events Cornerstone because the deficiency 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 issue did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The cause of the finding has human performance crosscutting aspects in the area of work practices because Wolf Creek did not follow maintenance procedures and did not ensure oversight of work activities such that nuclear safety was supported (H.4(b)).

Inspection Report# : [2007003](#) (*pdf*)

Mitigating Systems

Significance:  Oct 06, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement transient combustible material control permit requirements

The inspectors identified a Green noncited violation of Technical Specification 5.4.1.d for failing to control combustible materials in an area of the plant that contained safety-related equipment. During a walkdown, inspectors noted that temporary scaffolding constructed of flame retardant treated wood installed in the emergency diesel generator rooms did not have a transient combustible materials permit. Following review of the procedure for control of combustibles, it was noted that the licensee inappropriately considered fire retardant treated wood as noncombustible material and exempted it from permit control. This could lead to the uncontrolled use of fire treated wood throughout the facility, even in excess of fire hazard analysis limits for fire loads.

The inspectors determined that the inadequate control of transient combustibles in the emergency diesel generator rooms was more than minor because, if left uncorrected, it would become a more significant safety concern and could potentially affect emergency diesel generator availability due to fire under the mitigating systems cornerstone. The finding was of very low safety significance because it involved the combustible controls program and was assigned a low degradation rating since the flame retardant treated wood is considered a high flashpoint material.

Inspection Report# : [2007004](#) (*pdf*)

Significance:  Oct 06, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to collar EDG assembly procedure resulting in NOED

A self-revealing noncited violation was identified regarding failure to follow a procedure used to reassemble the intercooler and jacketwater pumps to the Train A emergency diesel generator resulting in the Emergency Diesel Generator A being inoperable. During reassembly of the Emergency Diesel Generator A on June 6, 2007, the stationary seals for the intercooler and jacketwater pumps were not correctly installed in their housings. On July 5, 2007, the Emergency Diesel Generator A failed its surveillance test because the intercooler pump leaked at a rate of 23.4 ml/min with an acceptability limit of 9.1 ml/min. Even with the leakage, Emergency Diesel Generator A was later determined to be capable of running for greater than 24 hours.

The failure to install the stationary seals in accordance with the approved work orders is a performance deficiency. The finding is more than minor because it is associated with the human 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 (i.e., core damage). The finding is of very low safety significance because the issue does not represent a qualification or design deficiency, it did not represent a loss of safety function for a train or system as defined in the plant specific risk-informed inspection notebook, and was not related to external events such as fires and floods. The inspectors also determined that the finding has a human performance crosscutting aspect in the area associated with resources because the licensee failed to ensure that mechanics had adequate emergency diesel generator training to assure correct reassembly of the diesel auxiliaries as stated in Wolf Creek's root cause evaluation [H.2(b)].

Inspection Report# : [2007004](#) (*pdf*)

Significance:  Oct 06, 2007

Identified By: NRC

Item Type: FIN Finding

Failure to use appropriate guidance for valve operation

A self-revealing finding was identified when a nonlicensed plant operator failed to utilize appropriate guidance and used excessive torque on service water Valves 1WS0002A and 1WS0004 resulting in damage to the valves and unavailability of service water Pump 1WS01PA and the low-flow service water Pump 1WS002P. Valve 1WS0002A was repaired as emergent work and returned to service after approximately 42 hours of being unavailable and Valve 1WS0004 was repaired as corrective maintenance and returned to service after approximately 65 days of

unavailability. This issue is captured in the licensee's corrective action program.

The finding was more than minor because it is associated with the equipment performance attribute for 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. The inspectors also determined that this finding was 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. A Phase 3 evaluation was necessary since the finding involved concurrent multiple equipment degradations from a common cause. The Phase 3 evaluation concluded that the finding was of very low safety significance (Green). The inspectors also determined that the finding had a human performance crosscutting aspect in the area of work practices because the licensee failed to effectively communicate expectations regarding valve operations in accordance with procedural requirements [H.4(b)].

Inspection Report# : [2007004](#) (*pdf*)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Restoration of the Emergency Diesel Generator Fuel Oil Transfer Pump Control Circuit Following a Fire Requiring Control Room Evacuation

The team identified a noncited violation of Technical Specification 5.4.1.a, for the licensee's inadequate procedure for remotely starting the emergency diesel generator fuel oil transfer pump following a fire in the control room.

Specifically, the governing procedure failed to include the necessary actions to replace the control power fuse in the associated motor control center, which would likely be blown as a result of the fire-induced circuit failures assumed in the licensee's analysis for the control room fire. In addition, the licensee had failed to specify and stage the control power fuse and fuse puller that could be required for timely restoration of the emergency diesel generator fuel oil transfer pump to service following the control room fire. This issue was entered into the licensee's corrective action program as Condition Report 2007-02790.

The finding was more than minor because it is associated with the mitigating systems cornerstone attribute of procedural quality and affected the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," were used to conclude that analysis with Manual Chapter 0609, Appendix F, "Fire Protection Findings Significance Determination Process," was required because the issue involved a degradation in fire protection defense-in-depth strategies. A Phase 3 review was then performed by a senior reactor analyst who determined the finding to be of very low safety significance because of the low probability of a fire in relevant cabinets that would result in a control room evacuation.

Inspection Report# : [2007006](#) (*pdf*)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Control Associated with Vortexing Calculation

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in that, the licensee did not ensure adequate suction submergence for the containment spray pumps by not properly translating vortex design parameters into calculations relative to the refueling water storage tank. Specifically, the licensee used a non-conservative method to calculate the level required to prevent pump vortexing in the refueling water storage tank. The licensee entered the issue into their corrective action program as Condition Report 2007-02597 and revised the affected calculations.

The finding was more than minor because it is 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. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it was a design deficiency that did not result in a loss of operability. The finding had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(a)) because the licensee did not identify an issue in a timely manner, commensurate with its safety significance.

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct Discolored Boric Acid Deposits

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to identify and take timely corrective action to correct indications of material wastage at the base of the Refueling Water Storage Tank. Specifically, the licensee did not recognize and take actions to prevent recurring discolored boric acid deposits for approximately 9 years. This issue was entered into the licensee's corrective action program as Condition Report 2007-02742.

The finding was more than minor because if left uncorrected it would become a more significant safety concern in that continued wastage could impact component operability. Using the Phase 1 worksheets in Manual Chapter 0609, "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 finding had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(c)) because the licensee failed to thoroughly evaluate the problem such that the resolution addressed the cause and extent of condition.

Inspection Report# : [2007006](#) (pdf)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Nonconservative Battery Intercell Connection Resistance Value Specified in Design Calculation

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of the licensee to ensure that the 125 Vdc safety-related batteries would remain operable if all the intercell and terminal connections were at the resistance value of 150 micro-ohms as allowed by Technical Specification Surveillance Requirement 3.8.4.5. The licensee's design calculation used a non-conservative value. This issue was entered into the licensee's corrective action program as Condition Report 2007-02492.

The finding was more than minor because it is associated with the mitigating systems cornerstone attribute of design control and affected 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, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because it was a design deficiency confirmed not to result in a loss of operability. The finding had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(a)) because the licensee did not implement a program with a low threshold for identifying this issue and the licensee did not identify the issue completely, accurately, and in a timely manner.

Inspection Report# : [2007006](#) (pdf)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Battery Surfaces Not Cleaned as Required by Procedure

The team identified a noncited violation of Technical Specification 5.4.1.a, for the licensee's failure to clean electrolyte from the outside surfaces of the 125 Vdc safety-related batteries in accordance with procedures. Specifically, surveillance procedures for the 125 Vdc batteries required appropriate cleaning of electrolyte on battery cell covers following specific gravity checks, however, maintenance personnel did not perform this cleaning. The licensee has entered this issue into their corrective action program as Condition Report 2007-02580.

The finding was more than minor because if left uncorrected the finding would become a more significant safety concern due to the corrosive effects of electrolyte on battery posts and terminal connections. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because it did not result in a design qualification deficiency or loss of function and it did not

screen as risk significant due to external events. The finding had crosscutting aspects in the area of human performance associated with work practices (H.4(a)) because of insufficient communication of human error prevention techniques to maintenance personnel, specifically with respect to self and peer checking.

Inspection Report# : [2007006](#) (*pdf*)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: FIN Finding

Normal Charging Pump Balance Line Crack

The team reviewed a self-revealing finding associated with the licensee's failure to correct normal charging pump balance line vibrations in a timely manner. Because the licensee did not address the extended time and periodically increased magnitude of the vibrations, the balance line cracked, rendering the pump inoperable. This issue was entered into the licensee's corrective action program as Condition Report 2007-02339.

The finding was more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and affected the associated cornerstone objective ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(d)) in that licensee personnel did not take corrective actions to address a safety issue in a timely manner, commensurate with its safety significance.

Inspection Report# : [2007006](#) (*pdf*)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: FIN Finding

Inadequate Procedure for Maintaining Drains Capable of Functioning

The team identified a finding associated with the licensee's failure to maintain a procedure which ensured that control building room drains remained available to pass their design flows for postulated flooding events. As a result of the licensee's procedure and practices, debris and items were found in control building room drains. This issue was entered into the licensee's corrective action program as Condition Report 2007-02753.

The finding was more than minor because if left uncorrected it would become a more significant safety concern. This finding affected the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had crosscutting aspects in the area of human performance associated with work practices (H.4(b)) because the licensee did not define and effectively communicate expectations regarding procedural compliance and personnel following procedures.

Inspection Report# : [2007006](#) (*pdf*)

Significance:  Jul 20, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Diesel Generator Frequency Variation Not Considered in Loading Calculations

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance for the licensee's failure to account for the effect of emergency diesel generator frequency variation in the diesel loading calculations. Specifically, emergency diesel generator loading was based on nominal 60 hertz operation of pumps and fans and did not account for the 2 percent variation allowed by Technical Specifications. The licensee has entered this issue into their corrective action program as Condition Report 2007-02683.

The finding was more than minor because it was associated with the mitigating systems cornerstone attribute of design control and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, based on preliminary

calculations, the failure to account for frequency variations had more than a minimal effect on the outcome of the analysis in that the continuous load rating for the emergency diesel generators would have been exceeded in the recirculation phase of a loss-of-coolant accident with the assumed loads. The team determined that the finding screened as very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability.

Inspection Report# : [2007006](#) (*pdf*)

Significance:  Jul 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Manual Actions

A noncited violation of 10 CFR 50.65(a)(4) was identified for failure to adequately assess and manage the increase in risk during observation of a scheduled emergency diesel generator surveillance. On January 4, 2007, inspectors observed the emergency diesel Generator A hot start surveillance test and questioned plant operators regarding operability in Modes 1 or 2 of the emergency diesel generator while paralleled with the grid based on operating experience. The inspectors noted that operations personnel did not have a written set of steps or procedures identified for restoration of the emergency diesel generator, and would have to diagnose what restoration activities would have to be taken at the time of an emergency start demand based upon the step of the surveillance procedure in effect at the time the emergency start demand occurred. The inspectors also identified that operations personnel were unaware of the limiting response time for operator manual actions specified in Amendment 154 that approved testing in Modes 1 or 2. Wolf Creek has developed manual actions for restoration of the emergency diesel generator during testing. The failure to adequately assess and manage the increase in risk for the use of operator manual actions to ensure emergency diesel generator availability during surveillance testing was a performance deficiency. The finding is similar to the minor example 7(g) and is more than minor because it is associated with the Mitigating Systems cornerstone attribute of protection against external factors, and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the magnitude of the calculated risk deficit was less than 1×10^{-6} and other risk management actions were in place.

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Apr 07, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to implement fire protection impairment control permit requirements and compensatory measures

A self-revealing noncited violation of Technical Specification 5.4.1.d was identified for failure to implement fire protection impairment control permit requirements and compensatory measures when operators incorrectly disabled three fire detectors in the auxiliary building. The detectors in the auxiliary building were disabled without a proper fire impairment control permit and the required compensatory roving hourly fire watch for a period of approximately 5 hours as required by Administrative Procedure AP 10 103, "Fire Protection Impairment Control," Revision 21. This issue is captured in the licensee's corrective action program.

The failure to implement fire protection impairment control permit requirements and establish compensatory measures for the auxiliary building 1974' level was considered a performance deficiency. The inspectors determined that the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of protection against external factors and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because it involved compensatory measures for the fixed fire protection system and was assigned a low degradation rating since less than 10 percent of the fire detectors in the area were disabled. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because the licensee failed to apply appropriate human error prevention techniques such as self and peer-checking prior to removing the fire detectors from service (H.4(a)).

Inspection Report# : [2007002](#) (*pdf*)

Significance: TBD Dec 29, 2005

Identified By: NRC

Item Type: AV Apparent Violation

Failure to Maintain Reactor Coolant System Subcooling During the Alternative Shutdown

The team identified an Apparent Violation of Wolf Creek License Condition 2.C.(5)(a) concerning an inadequate alternative shutdown analysis. The licensee's alternative shutdown analysis was inadequate in that it used an acceptance criteria which was inconsistent with and less conservative than that required by the approved Fire Protection Program. The licensee developed Calculation Number AN-02-021, Revision 0, "OFN RP-017, 'Control Room Evacuation,' Consequence Evaluation", to demonstrate alternative shutdown capability for Wolf Creek in response to NRC-identified Noncited Violation 2002008-01, Inadequate alternative shutdown procedure. The calculation predicted that during an alternative shutdown, the reactor coolant system subcooling margin would not be maintained, significant voiding would occur in the core, and a steam void would form in the reactor vessel head. The licensee found the results of the calculation to be acceptable since it demonstrated that the void formation would be limited, natural circulation in the reactor coolant system would be maintained, sufficient decay heat removal would be maintained, and no fuel damage would occur. This is not consistent with the license condition to meet the technical requirements of 10 CFR Part 50, Appendix R. Section III.L of 10 CFR Part 50, Appendix R, "Alternative and dedicated shutdown capability", that states in part, "During the postfire shutdown, the reactor process variables shall be maintained within those predicted for a loss of normal a.c. power."

This finding is greater than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences (i.e., core damage). It is the NRC's understanding that the licensee does not consider these circuit vulnerabilities to be violations of NRC requirements. The licensee considers the spurious operation of multiple components to be outside of the plant licensing basis for the Fire Protection Program. Specifically, in this case, both pressurizer power-operated relief valves are assumed to spuriously open because of fire induced circuit damage. The NRC staff and the industry are currently working on developing a resolution methodology to address these types of potential fire induced circuit failures. The team concluded that this violation meets the criteria of the NRC Enforcement Manual Section 8.1.7.1 for deferring enforcement actions for postulated fire induced circuit failures. Inspection Report# : [2005008](#) (*pdf*)

Significance: TBD Dec 29, 2005

Identified By: NRC

Item Type: AV Apparent Violation

Inadequate Alternataive Shutdown Procedure

The team identified an Apparent Violation of Technical Specification 5.4, Procedures, due to an inadequate alternative shutdown procedure that is required for implementation of the Fire Protection Program. The team found that some time critical actions required to safely shutdown the plant following a control room fire could not be accomplished within the required time periods. Specifically, the team found that the recommendations by Westinghouse Owners Group for assuring reactor coolant pump seal reliability and avoiding component cooling water thermal barrier water hammer concerns would not be met if the operators had to respond to multiple spurious operations. The procedure was developed and verified based on a time line assuming operators only have to respond to one spurious operation from the fire induced damage during the scenario. The team disagrees with this limitation of potential spurious operations.

This finding is greater than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences (i.e., core damage). It is the NRC's understanding that the licensee does not consider these circuit vulnerabilities to be violations of NRC requirements. The licensee considers the spurious operation of multiple components to be outside of the plant licensing basis for the Fire Protection Program. The NRC staff and the industry are currently working on developing a resolution methodology to address these types of potential fire induced circuit failures. The team concluded that this violation meets the criteria of the NRC Enforcement Manual Section 8.1.7.1 for deferring enforcement actions for postulated fire induced circuit failures.

Inspection Report# : [2005008](#) (*pdf*)

Barrier Integrity

Significance:  Jul 07, 2007
Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish an Adequate Preventive Maintenance Program

The inspectors identified a noncited violation of Technical Specification 5.4.1.a in which Wolf Creek did not implement a preventive maintenance procedure to mitigate Train B emergency exhaust system fan bearing vibrations which resulted in a degraded condition. Specifically, the vendor manual directs lubrication every 3 to 12 months (3 to 6 months for average conditions being room temperature and clean conditions) to prevent oxidation and breakdown of the grease; however, the Wolf Creek recurring preventive maintenance was set to lubricate the bearings every three years. This recurring preventive maintenance was not sufficient to ensure the bearings remained adequately lubricated. It was not until NRC questioning that Wolf Creek generated a condition report to review the past condition of the bearings and the appropriateness of the recurring lubrication interval for the bearings.

The licensee's failure to implement preventive maintenance to ensure the fan bearings were adequately lubricated is a performance deficiency. The finding is more than minor because it is associated with the barrier performance attribute of the Barrier Integrity Cornerstone; and, it affected the cornerstone objective to maintain radiological barrier functionality of the auxiliary and fuel building. The finding is of very low safety significance because the issue only represents a degradation of the radiological barrier function provided for the auxiliary or fuel building barriers to mitigate airborne radionuclides from emergency core cooling system pump cubicles or a fuel handling accident, respectively. The cause of the finding has problem identification and resolution crosscutting aspects in the area of corrective action because Wolf Creek did not evaluate or resolve the causes of repeated bearing degradation by thoroughly evaluating problems such that the resolutions address causes and extent of the conditions (P.1(c)).

Inspection Report# : [2007003](#) (*pdf*)

G

Significance: Jul 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Test Control Procedures to Demonstrate Operability

The inspectors identified a noncited violation of 10 CFR, Part 50, Appendix B, Criterion XI, "Test Control," in which Wolf Creek did not implement controlled testing of the Train B emergency exhaust system fan to demonstrate operability prior to returning the fan to service after bearing replacement. Specifically, on June 12, 2007, Wolf Creek restored the B emergency exhaust system fan to service without implementing the postmaintenance testing described in Procedure AP 16E-002, "Postmaintenance Testing Development," Revision 6A. Upon review of the postmaintenance testing, the fan failed the vibration portion of the testing and Wolf Creek did not perform an operability evaluation in accordance with Procedure AP 28-001, "Operability Evaluations." Based on inspector questioning, Wolf Creek performed the correct postmaintenance testing and an operability evaluation. These issues are under evaluation in the Wolf Creek corrective action program.

The failure to follow test control procedures for the safety-related B emergency exhaust system fan prior to declaring it operable is a performance deficiency. The finding is more than minor because it is associated with the Barrier performance attribute of the Barrier Integrity Cornerstone; and, it affected the cornerstone objective to maintain radiological barrier functionality of the auxiliary and fuel building. The finding is of very low safety significance because the issue represents a degradation of only the radiological barrier function provided for the auxiliary or fuel building barriers to mitigate airborne radionuclides from emergency core cooling system pump cubicles or a fuel handling accident. The cause of the finding has human performance crosscutting aspects in the area of decision making because Wolf Creek did not initially conduct an adequate test and then failed to question the failed postmaintenance test by making a safety-significant or risk-significant decision using proceduralized systematic processes, especially when faced with uncertain or unexpected plant conditions, to ensure safety is maintained (H.1 (a))

Inspection Report# : [2007003](#) (*pdf*)

G

Significance: Apr 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to maintain steady state reactor power at or below the licensed thermal power limit

A noncited violation of Technical Specification 5.4.1.a occurred when operators did not take timely action to lower power below the licensed thermal limit of 3565 MWt. During an incore to excore neutron detector calibration, the power level exceeded the limit and the operating crew did not insert negative reactivity until after the neutron detector calibration was complete. During this evolution, the reactor exceeded licensed thermal power of 3565 MWt for

approximately 58 minutes, peaking at 3566.5 MWt according to the plant computer's 10 minute calorimetric. After the neutron detector calibration was completed, operators added boron to the reactor coolant system to reduce power below 100 percent. Procedure GEN 00-004, "Power Operation," Attachment B, Step B.1.1 states, in part, that exceeding 3565 MWt is permitted only as a result of transients or computer point fluctuations. The inspectors judged that allowing reactor power to ascend above 100 percent for nearly an hour was not a transient. However, operators did not initiate action in accordance with Step B.1.1 when the 10 minute average exceeded 3565 MWt until approximately 40 minutes elapsed. This issue is entered into the corrective action program.

The failure to maintain steady state reactor power at or below the licensed thermal power limit is a performance deficiency. The finding was more than minor because it is associated with the configuration control attribute for the Barrier Integrity Cornerstone; and, it affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radio nuclide releases caused by accidents or events. The finding was of very low safety significance because the fuel cladding barrier was affected but did not affect the reactor coolant system or containment barriers. This finding has a crosscutting aspect in the area of human performance associated with the decision making component because the licensee did not ensure that licensed operators used conservative assumptions in their decision making when reactor power increased above the licensed limit for an extended period (H.1(b)).

Inspection Report# : [2007002](#) (*pdf*)

Significance:  Apr 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to remove the correct containment radiation monitor from service

A self-revealing noncited violation of Technical Specification 5.4.1 occurred on February 20, 2007, when a chemistry technician inadvertently removed both containment purge radiation Monitors GTRE22 and GTRE33 from service at the same time. During planned maintenance on the safety-related GTRE33 containment purge radiation monitor, a chemistry technician inadvertently removed the incorrect containment purge radiation monitor from service. After contacting the control room, the shift chemist went to GTRE22 and incorrectly removed the radiation monitor from service. Instrumentation and controls personnel working at GTRE33 informed the shift chemist that the incorrect radiation monitor was removed from service. The shift chemist subsequently returned GTRE22 to service. Technical Specification 3.3.6, Condition A, was entered for having more than one train inoperable. The containment purge and supply dampers were immediately verified to be closed and remained closed with no containment purge in progress. This issue was entered into the licensee's corrective action program.

The inspectors determined that the failure to remove the correct containment radiation monitor from service was a performance deficiency. The finding was more than minor because it is associated with the configuration control attribute for the Barrier Integrity Cornerstone; and it affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radio nuclide releases caused by accidents for events. The finding was of very low safety significance because both trains of the radiation monitor protective functions (i.e., to stop a containment purge on a high radiation signal) were affected but did not result in an actual open pathway in the containment barrier. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because the shift chemist failed to apply appropriate human error prevention techniques such as self and peer-checks (H.4(a)).

Inspection Report# : [2007002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Significance:  Apr 07, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to perform an adequate survey in a high radiation area

The inspector reviewed a self-revealing noncited violation of 10 CFR 20.1501(a) because the licensee failed to perform an adequate survey in a high radiation area. On March 7, 2007, a health physics technician performed a survey of Floor Drain Tank Room 7126 in the radwaste building to support a task performed by two radwaste operators. The health physics technician surveyed the immediate work area and informed the operators that general work area dose rates were 10 millirem per hour. Based on this information, operators entered the posted high radiation area on a radiation work permit that had an electronic dosimeter dose rate set point of 50 millirem per hour. One of the operators received a dose rate alarm while performing the task, the operators exited the area, and contacted health physics personnel. Subsequent investigation identified that a comprehensive survey of the entire room was not performed. Follow-up surveys indicated that dose rates in the room were as high as 150 millirem per hour at 30 centimeters from the floor drain tank. This issue has been entered into the licensee's corrective action program. The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Exposure Control, and affected the cornerstone objective because workers could have received additional radiation dose. The finding was processed through the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it was not an as low as is reasonably achievable finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. Additionally, this finding has a crosscutting aspect in the area of human performance related to work controls because the failure to incorporate job site conditions impacted the margin of radiological safety provided by an adequate survey (H.3(a)).

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Public Radiation Safety

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:  Apr 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to maintain sufficient records to furnish evidence of events significant to plant safety

A noncited violation of Technical Specification 5.4.1.a was identified for failure to maintain sufficient records (logs) to furnish evidence of events significant to plant safety. On January 26, 2007, electrical maintenance commenced a scheduled replacement of main control board Annunciator Power Supply E1PS5. During the power supply replacement, a loss of 8.7 percent of the annunciators was expected. However, during de-termination of the power supply leads, an unexpected loss of a significant number of the main control board annunciators occurred. Subsequently, due to the large number of annunciator inputs that were lost, the plant computer became overloaded and stopped updating. Based on these indications, the control room operators would need to evaluate emergency action level and Technical Specification requirements. The inspectors discovered during interviews with the operations crew that was on watch during the event, that no information was recorded or kept during the event. Administrative Procedure AP 21-001, "Conduct of Operations," Revision 36A, requires operators to make plant log entries of potentially reportable occurrences, entries that could be useful in reconstructing events, and events significant to plant safety. However, the logs were not updated until several hours later based on verbal accounts provided to the

oncoming crew. The inspectors noted that the 'after the fact' log entries still provided insufficient data to reconstruct the activities related to the loss of annunciators. This issue is captured in the licensee's corrective action program. The failure to adequately document times and information for the loss of annunciators was considered to be a performance deficiency. This finding was more than minor because it could impact the operator's ability to accurately implement emergency action levels and Technical Specification action statements and if left uncorrected, this type of insufficient documentation could become a more significant safety concern. The finding required NRC management review and was determined to be of very low safety significance because the loss of annunciators challenged the emergency action level time requirements but was restored prior to exceeding any emergency action level or Technical Specification action time requirement. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because the licensee failed to effectively communicate expectations regarding plant operating log entries in accordance with procedural requirements (H.4(b)).
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Significance: Apr 07, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to maintain drawings technically accurate

A self-revealing finding was identified regarding inadequate engineering drawings used as guidance to replace main control board annunciator power supplies resulting in a loss of all main control board annunciators. During determination of the power supply leads, an unexpected loss of a significant number of the annunciators occurred. During the planning review of Work Order 06 280217 003, "Replace Power Supply RK045E1PS5," the electricians brought forth a concern about the daisy chaining of the leads associated with the main control board power supplies and not knowing what effect removing a power supply would have on additional annunciators. System engineering reviewed vendor drawings and determined that only the expected annunciators would be lost. The vendor drawings only consisted of discrete wire connections from the power supply to the logic bus and did not show interconnections with any other power supplies. Although, it was acknowledged by system engineering that there were numerous daisy chained connections not shown on the vendor drawings, no further reviews or research was conducted. The licensee's root cause analysis determined that the vendor drawings did not show the interconnecting wiring identifying point to point connections associated with the main control board power supplies. This issue is captured in the licensee's corrective action program.

The failure to maintain drawings technically accurate and reflect the as-built condition of the plant was considered to be a performance deficiency. The finding was more than minor because it impacted the maintenance technicians ability to accurately plan and implement work, resulting in the annunciator system being adversely affected and could be reasonably viewed as a precursor to a significant event. The finding required NRC management review and was determined to be of very low safety significance because the finding did not result in a loss of a system safety function or a loss of risk significant equipment for greater than 24 hours. This finding has a crosscutting aspect in the human performance area associated with the resources component because the licensee failed to maintain complete, accurate and up-to-date design documentation (H.2(c)).

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Last modified : February 04, 2008