

Wolf Creek 1

2Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate work instructions resulted in condensate pump trip

A self-revealing finding was identified for inadequate work instructions and poor work practices associated with trip circuit verification on the Central Chiller B resulted in the Condensate Pump B trip and steam generator level transient. Procedure RNM C-1301, "Miscellaneous Relay and Meter equipment," Revision 6, step 8.3.2.8.h of RNM C-1301 required in part that a jumper be installed from Terminals 3 to 4 on Relay 194 at Breaker PB00402 for the Central Chiller B (wire C280 and C281) which resulted in Condensate Pump B trip. However, this step was copied from a previous work order and not verified as appropriate for the testing being conducted. Step 8.3.2.8.h should have read in part to install jumpers from Terminals 7 to 8 (wire C284 and C285). Licensee reviews and walkdowns were inadequate to identify the incorrect instructions due to workload, interruptions and distractions during the review process. The evaluation also identified Performance Improvement Request 2002-1664 which discussed a similar event where copied information in a work order was incorrect and not identified in reviews. Corrective actions for this event included adding sign-off sections in RNM C-1301 for walkdowns/reviews to ensure work instructions were reviewed before work was performed.

The failure to provide adequate work instructions is a performance deficiency. This finding was more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and it affected the cornerstone objective to limit the likelihood of those events that upset plant stability. This finding also affected the procedure quality 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 (i.e., core damage). Because two cornerstones were affected a Phase 2 analysis was required. The consequences were assessed using the Phase 2 pre-solved tables with the assistance of a Region IV Senior Reactor Analyst. Although the likelihood of a trip was increased and the capability of the normal heat sink was reduced, the exposure time for this condition was less than 3 days and all other mitigation capabilities were maintained. Consequently, the finding was determined to be of very low safety significance. The cause of the finding has human performance crosscutting aspects in the area associated with work practices because the licensee failed to ensure that human error prevention techniques such as self/peer-checking and proper documentation of activities were used in the review of work activities such that they are performed safely (H.4(a)).

Inspection Report# : [2007005 \(pdf\)](#)

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:  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

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

The inspectors identified a noncited violation of Technical Specification 5.4.1.d for failure to implement fire protection impairment control permit requirements and compensatory measures when operators received a trouble alarm on a fire detector in the auxiliary building. On January 26, 2008, operators discovered that Detector KC-104-XCH-ID-006 did not have a fire protection impairment control permit. This detector was adjacent to Detector KC-104-XSH-ID-007 which was already inoperable in Impairment 2008-020. The licensee's administrative procedure required fire detection in the area to be declared inoperable if two adjacent detectors are inoperable. This condition existed for approximately 24 hours and would have required a compensatory continuous fire watch for the period that both detectors were inoperable. The residents identified that the control room turnover checklist contains a section for listing the KC008 alarms; however, the two turnover checklists for the two shifts following the initial alarm did not identify Detector KC 104 XCH ID 006 as a Detector KC 008 alarm.

The failure to implement fire protection impairment control permit requirements and establish compensatory measures for the auxiliary building 2026-foot level was considered a performance deficiency. 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. Specifically, this issue relates to the protection against fire example of protection against external factors attribute because the detectors were inoperable without ensuring compensatory measures were in place. 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. The finding has crosscutting aspects in the area of human performance associated with work practices

because the licensee failed to apply appropriate human error techniques such as self and peer checking techniques to avoid committing errors [H.4(a)].

Inspection Report# : [2008002](#) (pdf)

Significance:  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Performing prohibited elective maintenance on offsite power during EDG maintenance

• An NRC identified a noncited violation of Technical Specification 3.8.1.B.4 resulted from Wolf Creek removing equipment from service that was prohibited by the TS. Inspectors reviewed Technical Specification Bases 3.8.1.B.4 which prohibits elective maintenance within the switchyard that would challenge offsite power. Inspectors also reviewed the NRC Safety Evaluation Report for the 7 day emergency diesel generator allowed outage time (Technical Specification 3.8.1.B.4.2.2) and found that Section 4.6.c, states: “The offsite power supply and switchyard conditions are conducive to an extend[ed] DG [completion time], which includes ensuring that switchyard access is restricted and no elective maintenance within the switchyard is performed that would challenge the offsite power availability.” The inspectors determined that challenges to offsite power can originate with elective maintenance inside the protected area.

The inspectors determined that the failure to implement requirements of the NRC Safety Evaluation Report and Technical Specification Bases for Technical Specification 3.8.1.B.4 was a performance deficiency. 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 (i.e., core damage). The finding was determined to be of very low safety significance because the issue resulted in the Train B offsite power being inoperable, but capable of supplying the safety bus for greater than 24 hours. Additionally, the cause of the finding has a human performance crosscutting aspects in the area associated with work control. Specifically, Wolf Creek did not ensure STS IC-805B was appropriately coordinated within organizations to assure plant and human performance during the extended emergency diesel generator allowed outage time. [H.3(b)]

Inspection Report# : [2008002](#) (pdf)

Significance:  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to establish reasonable expectation of operability

• An NRC identified NCV of Technical Specification 5.4.1 for failure to follow the operability process on discovery of the CCP A room cooler leak. Wolf Creek made no log entries at 2:20 p.m. stating its basis for immediate operability. At 3:50 p.m., Wolf Creek control room logs state that centrifugal charging Pump A had a room cooler leak and structural integrity cannot be verified. Subsequent entry into Technical Specification 3.7.8 for the essential service water Pump A caused emergency diesel Generator A to be inoperable. Technical Specification 3.8.1, Condition I states that with three alternating current sources inoperable (both emergency diesel generators and on offsite source), Technical Specification 3.0.3 shall be entered. Wolf Creek exited Technical Specification 3.0.3 at 4:13 p.m. when the inlet and outlet valves to centrifugal charging Pump A’s room cooler were closed. The inspectors could not locate any justification produced by Wolf Creek for the room cooler’s operability after 2:20 p.m.

The inspectors determined that the failure to follow the operability process is a performance deficiency. The inspectors determined that this finding was more than minor because if left uncorrected, it could become a more serious problem if the Technical Specification is not correctly applied. The finding screened to Phase 2 because the finding represents an actual loss of safety function of a single train of high head injection. A bounding risk of Green results from the Phase 2 presolved worksheets using an exposure time of less than 3 days for the centrifugal charging pump (CCP) A [Fails to Run].” The inspectors also determined that the finding had a human performance crosscutting aspects in the area associated with decision making because the licensee failed to use conservative assumptions in its operability decision and apply a requirement to demonstrate that the room cooler is operable is in order to proceed rather than a requirement to demonstrate that it is inoperable [H.1(b)].

Inspection Report# : [2008002](#) (pdf)

Significance:  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Untimely corrective actions for CCP room cooler leads to NOED

The inspectors identified a noncited violation of 10 CFR Part 50 Appendix B Criterion XVI, "Corrective Action," because Wolf Creek failed to take timely corrective actions to prevent failure of the centrifugal charging pump A room cooler which resulted in a Notice of Enforcement Discretion (EA 08 052). The inspectors found that room Cooler SGL12A experienced leaks in October 1999, May 2003, October 2003, August 2004, October 2006, and again in February 2008. On March 14, 2007, Wolf Creek chose to delay SGL12A's replacement until Refueling Outage 16 due to the required length of time to replace the cooler. On February 13, 2008, a circumferential flaw on an H bend was discovered in SGL12A preventing it from performing its safety function. Inspectors reviewed corrective action Procedure AP 28A-100, "Condition Reports," Revision 3 and found that a loss of a train to perform its safety function was considered a significant deficiency requiring corrective action to prevent recurrence. The inspectors reviewed this issue under Performance Improvement Requests 2005-2507 and 2004-0688, and Condition Report 2008-0467 and found that Wolf Creek designated prior failures nonsignificant.

The failure to take timely corrective actions within 9 years was a performance deficiency. The inspectors determined that this 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 (i.e. core damage). The finding screened to Phase 2 because the finding represents an actual loss of safety function of a single train of high head injection for greater than its Technical Specification 3.8.1.B.2 allowed outage time of 4 hours. Using an exposure time of less than 3 days for the scenario "Centrifugal Charging Pump PBG05A [Fails to Run]," a bounding risk of Green results from the Phase 2 presolved worksheets. Additionally, the cause of the finding has a human performance crosscutting aspect in the area associated with resources. Specifically, Wolf Creek did not ensure adequate resources to maintain long-term plant safety by minimizing the room coolers' long-standing issues and preventive maintenance deferrals [H.2(a)].

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to reestablish timely seal cooling for the reactor coolant pumps

- An NRC identified violation of Technical Specification 5.4.1.d resulted because Procedure OFN RP 017, "Control Room Evacuation," Revision 21, failed to account for the needed actions to reestablish reactor coolant pump seal cooling. Failure to reestablish seal cooling in a timely manner could have resulted in a small break loss of coolant accident.

This performance deficiency resulted from an inadequate postfire safe shutdown procedure. The inspectors determined the finding is greater than minor in that it affected the ability to achieve and maintain hot shutdown following a control room fire. This finding is associated with the Mitigating Systems Cornerstone attribute of protection against external factors (e.g., fire). This finding affected 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. In addition to the control room fire requiring operators to evacuate the control room, the fire would have had to affect components located in two physically separated panels. The licensee has IEEE 383 qualified cables and conductors throughout the plant. The Phase 3 risk evaluation performed by the NRC senior reactor analyst determined this deficiency had very low risk significance.

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to analyze motor operated valve circuits

- The inspectors identified a noncited violation of License Condition 2.c(5) because the licensee failed to evaluate the impact of a motor operated valve failure mechanism on their ability to implement postfire safe shutdown following a control room evacuation. The licensee determined that the failure mechanism affected 38 motor operated valves and

upon valve failure could affect their ability to implement their postfire safe shutdown procedure. A short circuit that bypassed the torque and/or limit switches could damage the valves and prevent repositioning of the valve in the postfire safe shutdown position.

The inspectors determined this was a performance deficiency because the licensee failed to ensure that components necessary to safely shutdown the reactor would remain operable following a fire. This deficiency was more than minor, in that, it had the potential to impact 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. In addition to the control room fire requiring operators to evacuate the control room, the fire would have had to affect components located in five different control panels. The Phase 3 risk evaluation performed by the NRC senior reactor analyst determined this deficiency had very low risk significance.

Inspection Report# : [2008002](#) (pdf)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Vent ECCS Piping Every 31 days

The team identified two examples of a noncited violation of Technical Specification Surveillance Requirements 3.5.2.3 for the failure to vent emergency core cooling system discharge piping. In the first example, the licensee had inappropriately concluded that inaccessible vents included all those located in posted high radiation areas, but either no high radiation field existed in the area or personnel would not be exposed to high radiation dose. The second example involved the failure to perform the surveillance in accordance with the 31 days required frequency. When the surveillance was conducted, gas was observed coming from a SI system hot leg injection line vent.

Both violation examples were more than minor because they were similar to non-minor examples 4.m from NRC Inspection Manual Chapter 0612, Appendix E. "Examples of Minor Issues," in that, when the surveillances were completed, unexpected amounts of gas were found the piping systems. Some sections were totally voided. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessment." The finding had a crosscutting aspect in the Human Performance, Resources component, because the licensee failed to have an adequate surveillance procedure that included all necessary ECCS vent values. These findings were indicative of current performance because operators, who are familiar with the TS requirements and Bases commitments, could have questioned, at any time, the practice of eliminating accessible values from the venting program. [H.2(c)]

Inspection Report# : [2008007](#) (pdf)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct Voiding in the Safety Injection System

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), with five examples, for the failure to promptly identify and correct voids in safety injection system. In some cases, significant changes in the safety injection tank leakage rates went unnoticed. Safety injection tank leakage can be a key indicator that voids are forming in lower pressure systems. In other examples, unexpected amounts of gas came from safety injection piping vents but operators and engineers failed to take meaningful actions to investigate or to address the occurrences. Contributors to the violation included: (1) the failure to properly address two pieces of related operating experience, (2) management's failure to follow site procedures and ensure that operating experience reviews were adequate, (3) the emergency core cooling system monthly venting procedure contained inadequate acceptance criteria, and (4) engineers were not adequately monitoring safety injection tank leakage.

This finding was more than minor because it was similar to non-minor example 3.j from NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that there was a reasonable doubt on the operability of the Train A safety injection system and the steam generators. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC

Manual Chapter Part 9900, Technical Guidance, “Operability Determination Process for Operability and Functional Assessments.” The finding had a crosscutting aspect in the Problem Identification and Resolution area, Operating Experience component, because the site had not institutionalized operating experience. This finding was indicative of current plant performance because the weaknesses in the operating experience program that permitted the inadequate review of operating experience were still in place at the time of this inspection. [P.2(b)]

Inspection Report# : [2008007 \(pdf\)](#)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct Voids in ECCS Suction Piping

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), because the licensee failed to promptly identify and correct voids in emergency core cooling system suction piping. After NRC concerns were raised, the licensee checked the suction piping and found voids in the piggyback lines (between residual heat removal discharge piping and charging and safety injection suction headers) and in shutdown cooling suction piping. Contributors to the violation included: (1) the failure to properly address two pieces of related operating experience, (2) management’s failure to follow site procedures and ensure that operating experience reviews were adequate.

This finding was more than minor because it was similar to non-minor example 3.j from NRC Inspection Manual Chapter 0612, Appendix E, “Examples of Minor Issues,” in that there was a reasonable doubt on the operability of the Train A safety injection system and the steam generators. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, “Operability Determination Process for Operability and Functional Assessments.” The finding had a crosscutting aspect in the Problem Identification and Resolution area, Operating Experience component, because the site had not institutionalized operating experience. This finding was indicative of current plant performance because the weaknesses in the operating experience program that permitted the inadequate review of operating experience were still in place at the time of this inspection.[P.2(b)]

Inspection Report# : [2008007 \(pdf\)](#)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate RHR and CS Void Calculations

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III (Design Control), for an inadequate calculation involving previously identified voids in the residual heat removal and containment spray containment suction piping. A contract engineer relied solely on engineering judgment to determine that the void stream, up to 11 percent, would have no affect on pump performance. Test data from an NRC NUREG, that the licensee had also used, contradicted the contractor’s assessment. A contributor to this violation was the licensee’s poor understanding of information contained in the NUREG.

This finding was more than minor because it was similar to non-minor example 3.j from NRC Inspection Manual Chapter 0612, Appendix E, “Examples of Minor Issues,” in that there was a reasonable doubt on the operability of the residual heat removal and containment spray pumps. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss of operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, “Operability Determination Process for Operability and Functional Assessments.” The finding had a crosscutting aspect in the Problem Identification and Resolution area, Corrective Action Program component, because the site failed to perform an adequate engineering evaluation for a nonconforming condition [P.1 (c)].

Inspection Report# : [2008007 \(pdf\)](#)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Correct Voiding Design Control Violation

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), because the licensee took inadequate corrective measures to address NRC identified deficiencies involving the calculation for voids in the residual heat removal and containment spray sump piping. The licensee's assessment failed to address the expected change in net-positive-suction-head required for the pumps. NRC issued guidance informed the licensee that this term would need adjustment.

This finding was more than minor because, if left uncorrected, could become a more significant safety concern. For example, the net positive suction head calculations for residual heat removal pumps shows that the pumps have very little design margin. The failure to properly address the voids may lead engineers to believe that there is margin available for plant modifications (such as the containment sump modification), when there is not. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss of operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessments." The finding had a crosscutting aspect in the Problem Identification and Resolution area, Corrective Action Program component, because the site failed to perform an adequate engineering evaluation for a performance deficiency [P.1(c)].

Inspection Report# : [2008007](#) (*pdf*)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Approve Engineering Calculations Prior to Use at Wolf Creek and Inadequate Work Instructions

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III (Design Control), with two examples for: (1) the failure to implement engineering procedures and approve a third party calculation prior to use at Wolf Creek, and (2) the failure to properly translate licensing and design basis information into instructions. Following identification of the first example, the licensee approved the subject calculation for use at Wolf Creek. However, the calculation had an inadequate basis for the acceptance of a 5 percent void fraction in suction piping and a 20 percent void fraction in discharge piping. Specifically, the calculation failed to consider the impact of voids on natural circulation operations and was inconsistent with Technical Specifications, the Updated Final Safety Analysis Report, and net positive suction head calculations. All had assumed that Wolf Creek piping was water solid.

The finding was more than minor because, if left uncorrected, could result in a more significant safety concern. Specifically, the existence of 5 percent void fraction on the suction side of the pumps and 20 percent on the discharge side are still unanalyzed conditions and could adversely impact design basis accident analysis results. The licensee's operability assessment provided a reasonable expectation that design limits would not be exceeded. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessments." The finding had a crosscutting aspect in the Problem Identification and Resolution area, Corrective Action Program component, because the site failed to perform an adequate engineering evaluation [P.1(c)].

Inspection Report# : [2008007](#) (*pdf*)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Piping Design Procedure and ASME Code Requirements

The team identified a noncited violation of 10 CFR 50, Appendix B, Criterion V (Procedures), for the failure to implement piping design procedure requirements. The procedure required that piping systems be designed for normal

component service (filling and venting) as well as routine operational surveillance (monthly emergency core cooling system venting). The piping systems were actually designed with some sections that could not be totally filled. The licensee also failed to design the piping in accordance with the ASME Code, which required vents at all piping high points.

The finding was more than minor because, if left uncorrected, it could result in a more significant safety concern. Specifically, the performance of emergency core cooling system systems with voids is not totally understood and could result in adverse systems response such as degraded pump performance or adversely impact natural circulation operations. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss of operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessments."

Inspection Report# : [2008007](#) (pdf)

Significance:  Mar 13, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Root Cause Assessment

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, because the licensee failed to follow the site procedure when performing a root cause assessment for the emergency core cooling system voiding issues and, subsequently, completed an inadequate root cause assessment. The licensee came to the erroneous conclusion that operating experience evaluations were thorough, but actually drew broad conclusions based on unverified and incorrect information, and had failed to identify significant contributors to the events.

The finding was more than minor because, if left uncorrected, it could result in a more significant safety concern. Specifically, the NRC relies heavily on the licensee's ability to find and correct their own safety issues. The licensee's reliance on unvalidated (and incorrect) information and the crafting of corrective measures to fit erroneous conclusions provides an unacceptable level of confidence that the licensee can consistently correct its own problems without NRC involvement. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessments." The finding had a crosscutting aspect in the Problem Identification and Resolution area, Corrective Action Program component, because the site failed to perform an adequate engineering evaluation.[P.1(c)]

Inspection Report# : [2008007](#) (pdf)

Significance:  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Twenty one examples of failure to follow seismic requirements of scaffolding procedure

The team identified a noncited violation of 10 CFR 50 Appendix B Criterion V, in which 21 scaffolds in 10 plant areas that were in contact with or closer to plant equipment than procedure allowed. The procedure required engineering evaluations which did not contain any technical bases as to the acceptability of as built scaffolds. Subsequent engineering evaluation of each of the incorrect scaffolding installations confirmed that the configurations did not challenge operability. The NRC identified previous concerns with the erection of scaffolds, yet the licensee failed to take action to correct this issue.

The team evaluated the significance of this finding using Phase 1 of Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined that the finding was of very low safety significance because the issue resulted in 21 unevaluated scaffolds which are likely not to challenge the ability of the plant to safely shutdown after an earthquake. As such, under Phase 1 screening, the deficiency is not related to 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 did not screen as risk significant for seismic external events, because the affected systems were considered degraded, but operable. Using these inputs, the performance deficiency screened to Green. The team determined that the finding had a human performance

crosscutting aspect in the area associated with decision making because the licensee failed to adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that the proposed action is safe in order to disapprove the action. Specifically, Wolf Creek Generating Station did not conduct any review of engineering decisions to verify the validity of the underlying assumption that equipment and scaffolding could be in contact or closer than the established limit (H.1(b)).

Inspection Report# : [2008006](#) (pdf)

Significance:  Feb 29, 2008

Identified By: NRC

Item Type: FIN Finding

Failure to take Corrective Action For Missed Compensatory Measures

The team identified a finding because the licensee failed to take timely corrective actions to address a previously identified NRC finding. FIN 2007002-04 was issued because the licensee had failed to establish compensatory actions in response to the failure of all Main Annunciator Board alarms. Failure to have compensatory measures inhibited the licensee in their efforts to determine the cause of the alarm failures. Corrective actions repaired the equipment that caused of the annunciator failure, but were unrelated to the failure to follow procedures and take compensatory measures.

The team determined that this was a performance deficiency because the licensee had committed to take corrective actions in response to the previous NCV but failed to do so in a timely manner. The inspectors determined that this violation was greater than minor because it met the intent of MC 0612 Appendix E Example 4.a. in that there were several examples of the licensee failing to take corrective actions in response to NRC identified NCVs and findings, indicating that “The licensee routinely failed to perform engineering evaluations on similar issues.” The inspectors performed a Phase I SDP evaluation and determined that the violation was screened as being very low safety significance, Green, because all of the answers to the Phase I Worksheet Mitigating Systems Column were “no”. The team also determined that this finding has crosscutting aspects in the problem identification and resolution area associated with the corrective action program in that the licensee failed to implement timely or effective corrective actions. (P.1(d)).

Inspection Report# : [2008006](#) (pdf)

Significance:  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to take corrective action for missed operability evaluation compensatory measures

The team identified a violation of 10CFR50 Appendix B Criterion XVI because the licensee failed to take timely corrective actions to address a previously identified NCV. NCV 2007003-05 was issued because the licensee had failed to perform an operability evaluation following bearing replacement on the Train B emergency exhaust system fan. Corrective actions were not related to the missed performance of the operability evaluation, but the equipment failure.

The team determined that this was a performance deficiency because the licensee had committed to take corrective actions in response to the previous NCV but failed to do so in a timely manner. The inspectors determined that this violation was greater than minor because it met the intent of MC 0612 Appendix E Example 4.a. in that there were several examples of the licensee failing to take corrective actions in response to NRC identified NCVs and findings, indicating that “The licensee routinely failed to perform engineering evaluations on similar issues.” The inspectors performed a Phase I SDP evaluation and determined that the violation was screened as being very low safety significance, Green, because all of the answers to the Phase I Worksheet Mitigating Systems Column were “no”. The team also determined that this finding has crosscutting aspects in the problem identification and resolution area associated with the corrective action program in that the licensee failed to implement timely or effective corrective actions. (P.1(d)).

Inspection Report# : [2008006](#) (pdf)

Significance:  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to take timely corrective action to establish monitoring frequency of AFW pump governor null drift

The team identified a violation of 10 CFR 50 Appendix B Criterion XVI because the licensee failed to take timely corrective actions to address a previously identified finding. Finding 2006010 was issued because the licensee had failed to establish an acceptable monitoring frequency on their Turbine Driven Auxiliary Feedwater Pump speed governor null-drift as recommended by a Part 21 report from Engine Systems, Inc. The corrective actions to establish the monitoring for the null-drift were not implemented.

The team determined that this was a performance deficiency because the licensee had committed to take corrective actions in response to the previous NCV but failed to do so in a timely manner. The team determined that this violation was greater than minor because it met the intent of MC 0612 Appendix E Example 4.a. in that there were several examples of the licensee failing to take corrective actions in response to NRC identified NCVs and findings, indicating that "The licensee routinely failed to perform engineering evaluations on similar issues." The team performed a Phase I SDP evaluation and determined that the violation was screened as being very low safety significance, Green, because all of the answers to the Phase I Worksheet Mitigating Systems Column were "no." The team also determined that this finding has crosscutting aspects in the problem identification and resolution area associated with the corrective action program in that the licensee failed to implement timely or effective corrective actions (P.1(d)).

Inspection Report# : [2008006 \(pdf\)](#)

Significance:  Feb 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to take timely corrective action to correct Barton transmitter defects

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, regarding the failure to identify and correct conditions adverse quality associated with NRC NCV 2006-004-02 documented in Inspection Report 2006-004. Specifically, the licensee did not address in the apparent cause evaluation and corrective actions the failure to follow procedures resulting in an inadequate inspection of installed Barton pressure transmitters for known potential manufacturing defects which resulted in a previous violation of Administrative Procedure AP 28-011, "Resolving Deficiencies Impacting SSC's," Revision 1. The licensee inappropriately credited transmitter inspections that occurred several years prior to receipt of the vendor recommendation as sufficient to resolve this issue.

This finding was more than minor because it could reasonably be viewed a precursor to a significant event and affected the equipment performance attribute of the mitigating systems cornerstone and the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspectors determined that the finding is of very low significance because it did not represent an actual loss of a safety function or operability and was not potentially risk significant due to external events. The inspectors also determined that this finding has crosscutting aspects in the problem identification and resolution area associated with the corrective action program in that the licensee failed to identify the issue completely and thoroughly evaluate the problem such that the problem was resolved (P.1(a), P.1(c)).

Inspection Report# : [2008006 \(pdf\)](#)

Significance:  Feb 29, 2008

Identified By: NRC

Item Type: FIN Finding

Failure to take timely corrective action to correct annunciator feed configuration deficiencies.

The team identified a green finding for failure to implement corrective action for abandoned in place annunciator feed wiring deficiencies. CR 2005-003275 was initiated because Cables ST-009 and ST-019 were field-spliced together to prevent electrical shocks such that the system configuration did not match the system drawing. Work Order (WO) 07-292004-000 was initiated to correct this condition but was closed as unworkable. CR 2005-003275 was closed to this closed work order even though the condition was not corrected, leaving the system in a condition not reflected in drawings or design documents. This configuration could result in further shocks, and further configuration control issues. The main annunciator system and its feeds are not safety-related, and therefore this performance deficiency is

not a violation of NRC requirements.

The failure to implement corrective actions for an identified configuration control issue is a performance deficiency. This item affects the mitigating systems cornerstone. The team determined that this violation was greater than minor because it met the intent of MC 0612 Appendix E Example 4.a. in that there were several examples of the licensee failing to take corrective actions in response to findings, indicating that "The licensee routinely failed to perform engineering evaluations on similar issues." The team performed a Phase I SDP evaluation and determined that the violation was screened as being very low safety significance, Green, because all of the answers to the Phase I Worksheet Mitigating Systems Column were "no." The team also determined that this finding has crosscutting aspects in the problem identification and resolution area associated with the corrective action program in that the licensee failed to implement timely or effective corrective actions. (P.1(d)).

Inspection Report# : [2008006](#) (pdf)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to evaluate ESW valve corrosion

The inspectors identified a noncited violation (NCV) of 10 CFR Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to follow a procedure which required an evaluation of the Train B of ESW traveling screen wash valve and identical valves in the system after the Train A ESW screen wash valve had failed. Wolf Creek declined to enter its operability process but did tag Valve EF HV-92 open on September 13, 2007. An operability evaluation was produced on September 27, after EF HV-92 was disassembled and found to have unacceptable disc material loss due to corrosion. Corrective actions from the September 27 evaluation include a disassembly of an identical valve in the essential service water system that shows degrading but operable performance.

The failure to follow Procedure AP 26C-004, "Technical Specification Operability," which required an evaluation of Valve EF HV-92, is a performance deficiency. The finding is more than minor because if left uncorrected the valve discs corrosion would become a more significant safety concern. The finding was of very low safety significance because the issue resulted in Valve EF HV 92 being degraded, but did open even with significant material and is not related to a qualification or design deficiency, did not result in the loss of safety function for greater than 24 hours, and was not related to external events such as fires and floods. The cause of the finding had problem identification and resolution crosscutting aspects in the area associated with the corrective action program because the licensee failed to evaluate the failure mechanism completely, accurately, and in a timely manner commensurate with its safety significance (P.1(a)).

Inspection Report# : [2007005](#) (pdf)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate evaluation of EDG for common cause failure

The inspectors identified a noncited violation of Technical Specification 3.8.1 for failure to perform an adequate common cause evaluation within 24 hours to demonstrate no common cause failure mechanism existed between the emergency diesel generators. Wolf Creek's common cause evaluation stated that the "Hypothesis" was that the EDG A digital reference unit (DRU) had not been refurbished as recommended in a April 21, 2004, 10 CFR Part 21 notification from Fairbanks Morse which stated that Wolf Creek's DRUs were affected by an integrated circuit contamination problem. Inspectors reviewed the April 21 notification and found that the slow start rpm ramp function was affected, however, The inspectors reviewed operating experience and other generic correspondence and found a 10 CFR Part 21 notification dated January 23, 2006, from Engine Systems, Inc. (ESI), who is a vendor for DRUs. The ESI notification describes a DRU deficiency in which an integrated circuit manufacturing defect can cause failure of the engine load raise and lower signals to the electronic governor controller. The inspectors noted this failure mechanism was similar to Wolf Creeks observed failure on November 1, 2007. Both EDGs were found to be affected by the ESI notification.

The inspectors determined that the failure to demonstrate, per TS 3.8.1 required actions B.3.1 or B.3.2, that no common cause failure existed for the EDGs is a performance deficiency. The finding is 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 (i.e., core damage). The finding was of very low safety significance because the issue resulted in the EDG being degraded, but likely to start even with an intermittent failure and did not result in the loss of safety function for greater than 24 hours, and was not related to external events such as fires and floods. The cause of the finding had problem identification and resolution crosscutting aspects in the area associated with the corrective action program because the licensee failed to evaluate the failure mechanism completely, accurately, and in a timely manner commensurate with its safety significance (P.1(a)).
Inspection Report# : [2007005](#) (*pdf*)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: FIN Finding

Failure to enter and evaluate EDG operating experience in CAP

The inspectors identified a finding for failure to enter into corrective action program evaluate relevant emergency diesel generator operating experience which allowed a manufacturing defect to exist resulting in a testing failure. Procedure AP 20E-001, Step 4.1.1, in part, directs the screening and review of operating experience from sources such as vendors, the NRC, and other utilities. Although, the inspectors found that Wolf Creek was not specifically listed as affected in the ESI Part 21, they had procured DRUs that were listed by serial number on the ESI notification. The inspectors also found a Woodward service bulletin dated January 2006 that Wolf Creek had not reviewed addressing the same issue that listed DRU serial numbers affected which included Wolf Creeks DRUs.

The failure to enter into corrective action program evaluate publicly available operating experience directly applicable to Wolf Creek's emergency diesel generators is a performance deficiency. This 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 (i.e., core damage). The finding is of very low safety significance because the issue resulted in the EDG being degraded, but likely to start even with an intermittent failure and is not related to a qualification or design deficiency, did not result in the loss of safety function for greater than 24 hours, and was not related to external events such as fires and floods. The cause of the finding has a problem identification and resolution crosscutting aspect in the area associated with the operating experience program because the licensee's operating experience process did not use operating experience information, including vendor recommendations, to support plant safety. Specifically, the licensee did not systematically collect, evaluate, and communicate relevant external operating experience to affected internal stakeholders in a timely manner (P.2(a)).

Inspection Report# : [2007005](#) (*pdf*)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: FIN Finding

Clogged drains cause circulating water roof loads to exceed design

The inspectors identified a Green finding for exceeding the calculated roof loading for the circulating water screen house. In May 2007, Wolf Creek received heavy rains and water leaks from the circulating water screen house roof were observed. On May 8, 2007, it was observed that the roof of the circulating water screen house had accumulated approximately eight inches of standing water and that the drains were blocked by debris. Subsequently on May 8, the drains were cleared and the roof was drained. A roof yield or collapse was assumed to result in the loss of both circulating water and normal service water.

Exceeding the calculated allowable roof loading due to clogged drains is a performance deficiency. The finding is 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. Additionally, 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. This finding screened to a Phase 3 analysis because two or more cornerstones (Initiating Events and Mitigating Systems) were affected. The Senior Reactor Analyst performed the Phase 3 analysis and determined it to be of very low safety significance.

Inspection Report# : [2007005](#) (*pdf*)

Significance: G 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: G 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: G 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 \(pdf\)](#)

G

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 \(pdf\)](#)

G

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.

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

G

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: **G** 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: **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: G 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*)

Significance: G 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*)

Emergency Preparedness

Occupational Radiation Safety

G

Significance: Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to control area as a locked high radiation area

• The inspector reviewed a self-revealing noncited violation of Technical Specification 5.7.2.a for failure to evaluate changing radiological conditions and control an area as a locked high radiation area. Specifically, on October 17, 2007, dose rates in Room 7604 increased to levels requiring posting as a “Locked High Radiation Area” as a result of a vent and drain evolution. Dose rates reached a level of 1500 mRem/hour prior to the area being properly posted and controlled. This issue was entered into the licensee’s corrective action program as Condition Report 2007-003934. Immediate corrective actions included posting and controlling the area as a locked high radiation area. Other corrective actions included changing the vent and drain process to change the vent path.

This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that, the failure to properly post and control access to a locked high radiation area has the potential to increase personnel dose. This occurrence involves the potential for unplanned, unintended dose. Utilizing Inspection Manual Chapter 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” the inspector determined that the finding was of very low safety significance because it did not involve: (1) as low as is reasonably achievable planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding has a crosscutting aspect in the area of work control, work planning, in that the licensee failed to appropriately plan work activities by incorporating job site conditions that may impact radiological safety [H.3(a)].

Inspection Report# : [2008002](#) (*pdf*)

G

Significance: Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to follow procedure

• The inspector reviewed a self-revealing noncited violation of Technical Specification 5.4.1 for failure to follow a licensee procedure. Specifically, on March 29, 2008, one of two radiographers conducting radiography operations in the quality control vault received a dose rate alarm on their electronic dosimeter. The two radiographers evaluated the dose received and decided to continue with radiography without notifying health physics personnel to evaluate the conditions. This issue was entered into the licensee’s corrective action program as Condition Report 2008-001181. Immediate corrective actions included restriction of the radiographers to log onto the radiation work permit and discussions with the radiographers and the contractor’s radiation safety officer. Long term corrective action is still being evaluated.

This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that, the failure to stop work and notify health physics personnel for assistance had the potential to increase personnel dose. This occurrence involves the potential for unplanned, unintended dose. Utilizing Inspection Manual Chapter 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” the inspector determined that the finding was of very low safety significance because it did not involve: (1) as low as is reasonably achievable planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding has a crosscutting aspect in the area of decision making, risk significant decisions, because the radiographer and assistant failed to contact health physics personnel to discuss the circumstances surrounding the unexpected dose rate alarm [H.1(a)].

Inspection Report# : [2008002](#) (*pdf*)

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

Last modified : August 29, 2008