



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

September 13, 2010

EA-10-160

Matthew W. Sunseri, President and
Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION - NRC PROBLEM IDENTIFICATION
AND RESOLUTION INSPECTION REPORT 05000482/2010006 AND NOTICE OF
VIOLATION

Dear Mr. Sunseri:

On July 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Wolf Creek Generating Station. The enclosed report documents the inspection findings discussed with you and members of your staff during an exit briefing on July 30, 2010.

The inspection examined activities conducted under your license as they relate to identification and resolution of problems, safety and compliance with the Commission's rules and regulations and with the conditions of your operating license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. The inspectors also interviewed a representative sample of personnel regarding the condition of your safety-conscious work environment.

The NRC noted that a number of plant deficiencies were not being effectively resolved in your corrective action program. For example, the results of metallurgical examinations performed to assess piping corrosion and an analysis of water hammer issues affecting the essential service water system were performed outside the corrective action process and not used to update a currently open operability evaluation or a completed root cause evaluation. Another example involves the failure to effectively track and prioritize for corrective actions degraded or non-conforming conditions. The NRC noted a number of examples that involved deficiencies not being corrected during the first available opportunity, without adequate justification for the delay.

In addition, the team identified that a large number of control room instrumentation and control deficiencies currently exist. The NRC identified that some of these deficiencies have not been corrected for a number of years, the deficiencies impact on plant operations were not well understood by all plant operators, the deficiencies were not effectively being tracked in the control room deficiency log, and control room operators were not consistently reviewing these deficiencies during shift turnover. The NRC determined that additional actions are warranted to ensure that these control room deficiencies are promptly addressed before they have the potential to impact plant operations.

Wolf Creek Nuclear
Operating Corporation

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This report documents six noncited violations, one cited violation, and one finding, all of very low safety significance (Green). Because of the very low safety significance of the violations and because they were entered into your corrective action program, the NRC is treating these violations as noncited violations consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd., Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at the Wolf Creek Generating Station.

An NRC-identified violation is cited in the enclosed Notice of Violation (Enclosure 1). The violation involved the failure to perform an adequate cause evaluation and to take corrective actions to preclude repetition for a significant condition adverse to quality. Although determined to be of very low safety significance (Green), this violation is being cited in the Notice of Violation because not all of the criteria specified in Section VI.A.1 of the NRC Enforcement Policy were satisfied (EA-10-160). Specifically, the Wolf Creek Generating Station failed to restore compliance within a reasonable time after a previously-identified was identified in NRC Inspection Report 05000482/2009007-03. You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

If you disagree with the crosscutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at the Wolf Creek Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web-site at www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Tony Vegel, Deputy Director
Division of Reactor Projects

Docket No. 50-482
License No. NPF-42

Wolf Creek Nuclear
Operating Corporation

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Enclosures:

1. Notice of Violation
2. NRC Inspection Report 05000482/2010006
w/Attachment: Supplemental Information

cc w/Enclosures:

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Wolf Creek Nuclear
Operating Corporation

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R:_REACTORS_WC\2010\2010006-RPT-GMV.docx ADAMS ML

SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	gmv
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	gmv
RIV:TL:DRS/TSB		SRI:DRP/PBD	PE:DRP/PBE	PE:DRP/PBB	RI:DRP/PBB
MVasquez <i>/ RA/</i>	GWarnick <i>/RA/ per T w/gmv</i>		JMelfi <i>/RA/ by E</i>	GTutak <i>/RA/ by E</i>	CPeabody <i>/RA/ by E</i>
9/1/2010	9/2/2010		9/2/2010	9/2/2010	9/2/2010
C:DRP/PBB	RIV:C:DRS/TSB		SES:ACES	D/DRP	
GMiller <i>/RA/</i>	MHay <i>/RA/</i>		RKellar <i>/RA/ by E</i>	AVegel <i>/RA/</i>	
9/8/2010	9/12/10		9/9/2010	9/13/2010	

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NOTICE OF VIOLATION

Wolf Creek Nuclear Operating Company
Wolf Creek Generating Station

Docket No: 50-482
License No: NPF-42
EA-10-160

During an NRC inspection, conducted from July 12 through 30, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires that in the case of significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, from December 4, 2009, to July 30, 2010, the licensee failed to assure that the cause of a significant condition adverse to quality was determined and corrective actions were taken to preclude repetition. Specifically, after a loss of offsite power event on August 19, 2009, the licensee failed to perform an adequate evaluation to determine the cause of loss of offsite power induced water hammers and internal corrosion in the essential service water system, and did not take corrective actions to preclude repetition of additional water hammer events and system leaks. The licensee performed an apparent cause evaluation when a root cause evaluation was required.

This violation is associated with a Green Significance Determination Process finding.

Pursuant to the provisions of 10 CFR 2.201, Wolf Creek Nuclear Operating Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region IV, and a copy to the NRC Resident Inspector Wolf Creek Generating Station, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to Notice of Violation EA-10-160," and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time. If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC website at www.nrc.gov/reading-rm/pdr.html or www.nrc.gov/reading-rm/adams.html, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the basis for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information).

Dated this 13th day of September 2010.

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000482

License: NPF-42

Report: 05000482/2001006

Licensee: Wolf Creek Nuclear Operating Corporation

Facility: Wolf Creek Generating Station

Location: 1550 Oxen Lane SE
Burlington, Kansas

Dates: July 12 through 30, 2010

Team Leader: M. Vasquez, Senior Reactor Inspector, Technical Support Branch, DRS

Inspectors: G. Warnick Senior Resident Inspector
C. Peabody, Resident Inspector
J. Melfi, Project Engineer
G. Tutak, Project Engineer

Approved By: Michael C. Hay, Chief
Technical Support Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

IR05000482/2010006; February 16, 2008, through July 30, 2010: Wolf Creek Generating Station, Biennial Baseline Inspection of the Identification and Resolution of Problems

The report covers a 2-week period of onsite inspection by a senior reactor inspector, a senior resident inspector, a resident inspector, and two project engineers. The findings from this inspection include five Green NRC-identified noncited violations, one Green self-revealing violation, one Green finding, and one Green cited violation. The significance of most findings is indicated by their color (greater than Green, or Green, White, Yellow, Red), and was determined using Inspection Manual Chapter 0609, "Significance Determination Process." The crosscutting aspect was determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." The findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG 1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Identification and Resolution of Problems

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

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

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

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

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

This issue was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the finding has a crosscutting aspect in the area of human performance associated with the component of resources because the licensee failed to provide adequate procedures to assure timely resolution of degraded or nonconforming conditions [H.2(c)] (Section 4OA2.5a).

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

walkdowns of all scaffolding around safety-related structures, systems, and components.

The deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The finding was associated with the Mitigating Systems Cornerstone. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined the finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program because the licensee did not take appropriate corrective actions to address previously identified scaffolding construction issues in a timely manner [P.1(d)] (Section 4OA2.5b).

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

The deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern, in that, the deficient condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The finding is associated with the Mitigating Systems Cornerstone. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with numerous equipment issues and associated human performance aspects that might impact equipment operation. Using Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the finding is determined to have very low safety significance because there was no adverse impact to plant equipment. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the component of corrective action program because the licensee did not identify issues completely, accurately, and in a timely manner commensurate with their safety significance [P.1(a)] (Section 4OA2.5c).

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

The issue was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. The finding is associated with the Mitigating Systems Cornerstone. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of human performance associated with resources because the licensee failed to provide complete, accurate, and up-to-date procedures for performing operability evaluations [H.2(c)] (Section 4OA2.5d).

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

The issue was more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the component of corrective action program because the licensee failed to thoroughly evaluate problems such that the resolutions address causes and extent of conditions [P.1(c)] (Section 4OA2.5e).

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

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because licensee personnel failed to identify a potential deficiency in the ultimate heat sink in a timely manner [P.1(a)] (Section 4OA2.5f).

- Green. The inspectors reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to identify a degraded equipment condition in December 2006. As a result, the emergency diesel generator system experienced a failure on October 22, 2009, which caused the plant to make a notice of unusual event emergency declaration. Licensee personnel missed an opportunity to identify the

condition because they did not thoroughly evaluate a surveillance failure and post-mortem testing data available in December 2006.

The finding is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone, and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. A crosscutting aspect was identified in the problem identification and resolution in that the licensee did not thoroughly evaluate problems such that the resolution addressed causes [P.1(c)] (Section 4OA2.5g).

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

This issue was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone and affected the objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because licensee personnel failed to take appropriate corrective actions to previously identified problems [P.1(d)] (Section 4OA2.5h).

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152)

The inspectors based the following conclusions on the sample of corrective action documents that were initiated in the assessment period, which ranged from February 16, 2008, to the end of the onsite portion of this inspection on July 30, 2010.

.1 Assessment of the Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed approximately 275 condition reports, including associated root cause, apparent cause, and direct cause evaluations that were completed between February 16, 2008, and July 30, 2010, to determine if problems were being properly identified, characterized, and entered into the corrective action program for evaluation and resolution. The inspectors also reviewed system health reports, operability determinations, self-assessments, trending reports, metrics, and various other documents related to the corrective action program. The inspectors reviewed work requests and condition reports to assess the reporting threshold and prioritization processes. The inspectors' review included verifying that the licensee considered the full extent of cause and extent of condition for problems, as well as how the licensee assessed generic implications and previous occurrences. The inspectors assessed the timeliness and effectiveness of corrective actions, completed or planned, and looked for additional examples of similar problems.

The inspectors also reviewed a sample of corrective action documents that addressed past NRC-identified violations to ensure that the corrective actions addressed the issues as described in the inspection reports. The inspectors reviewed a sample of corrective actions closed to other corrective action documents to verify that corrective actions were appropriate and timely.

The inspectors considered risk insights to focus the sample selection and plant tours on risk significant systems and components. Based on this review, the samples reviewed by the inspectors focused on, but were not limited to, these systems. The inspectors also expanded this review to include 5 years of evaluations involving portions of the component cooling water system and essential service water system interfaces, and the nitrogen accumulators for the steam generator atmospheric relief valves to determine whether problems were being effectively addressed. The inspectors conducted a walkdown of these systems to assess whether problems were identified and entered into the corrective action program.

b. Assessments

Assessment - Effectiveness of Problem Identification

In general, the inspectors found that the licensee has been identifying problems and entering them into their corrective action program at appropriately low thresholds. However, the team identified issues that the licensee should have identified prior to the NRC. Examples of ineffective identification of issues include the following:

- NRC inspectors identified deficiencies in scaffolding that were erected near operable safety-related equipment (Section 4OA2.5b).
- Wolf Creek Generating Station failed to identify completely and accurately deficiencies with instruments and controls associated with 52 "WR" (work request) buttons on the control boards indicating that work requests had been initiated to correct problems. All deficiencies were not logged, and some buttons were near more than one control item such that it was not clear which buttons went with which control (Section 4OA2.5c).
- The licensee failed to identify a potential operability concern associated with delaying the 5-year preventive maintenance (dredging) of the ultimate heat sink (Section 4OA2.5f).
- Wolf Creek Generating Station has not given new system engineers training to identify issues that could impact their ability to identify deficiencies with safety-related systems. This includes items such as clearance between scaffolding and safety-related equipment and requirements for chocking carts near safety-related equipment that would assist system engineers in identifying deficiencies that could impact safety-related equipment. In addition, Wolf Creek Generating Station did not require system engineers to attend classroom training on the system assigned to them. This observation was more important for system engineers who had been employed at the plant less than 3 years.

Assessment - Effectiveness of Prioritization and Evaluation of Issues

Overall, the team concluded that Wolf Creek Generating Station's staff is correctly prioritizing and evaluating issues. The inspectors found that Wolf Creek Generating Station had improved the cause evaluations by training individuals on various levels of cause evaluations, by establishing teams of trained individuals to perform root cause evaluations instead of one individual, providing a management sponsor for root cause evaluation team, and providing greater senior leadership oversight over the cause evaluations. However, the inspectors also found numerous instances where Wolf Creek Generating Station failed to adequately evaluate the potential deficiencies with delays in correcting degraded or nonconforming conditions. While most initial operability determinations were appropriate, the inspectors identified several examples where poor evaluations were performed or the basis for operability used engineering judgment that was not supported by appropriate documentation. The following are examples of ineffective or inadequate evaluation of issues:

- The team identified numerous examples of degraded or nonconforming conditions with equipment problems that were not fixed prior to restart from the last outage (on November 21, 2009) with no evaluation performed to justify the delay for fixing the problem (Section 4OA2.5a).
- Licensee personnel failed to adequately evaluate the operability of the essential service water system when relevant new information was identified that challenged a previously performed operability determination (Section 4OA2.5d).
- The inspectors identified that the licensee failed to perform an adequate evaluation to determine the cause of loss of offsite power induced water hammers and internal corrosion in the essential service water system. Specifically, the licensee performed an apparent cause evaluation instead of a root cause evaluation, and the licensee's evaluation did not consider metallurgical evaluations that were performed outside the corrective action program (Section 4OA2.5e).
- Wolf Creek Generating Station did not evaluate the cause for an emergency diesel generator speed switch which could not be properly calibrated in December 2006. Instead, the licensee replaced the speed switch and power supply without determining that the cause was actually a degraded capacitor in the power supply. As a result, the emergency diesel generator failed on October 22, 2009, from a degraded capacitor in the power supply causing the plant to declare a notice of unusual event emergency declaration (Section 4OA2.5g).
- While performing an immediate operability evaluation of an emergency diesel generator on May 20, 2010, (discussed above), the inspectors noted that testing and analytical bases for establishing the acceptance criteria for the power supply noise filter degradation was performed informally and not under the proper purviews of the corrective action, quality assurance, or other applicable licensee programs. Furthermore the test results and analysis conclusions were not properly documented under such program or in any other engineering process document.
- The inspectors observed that the licensee conducted activities outside of the corrective action program in order to address problems related to the essential water system water hammer events and internal corrosion. For example, the licensee performed metallurgical analyses of piping corrosion and an analysis of water hammer issues, outside of the corrective action program. As a result, the conclusions of the evaluations were not evaluated through an updated operability determination nor in an updated cause evaluation (Sections 4OA2.5d and 4OA2.5e).

Assessment – Effectiveness of Corrective Action Program

The inspectors concluded that actions to correct conditions adverse to quality were generally effective. However, the team identified some notable examples where the licensee had not implemented effective corrective actions or addressed extent of condition. Some examples included:

- After the inspectors identified deficiencies with the minimum separation distance between scaffolding and safety-related equipment, the licensee performed a walkdown of all impacted scaffolding. After the licensee's review, the inspectors identified another example of the same deficiency. Two weeks later, the inspectors identified two more examples of the same deficiency, which was reflective of ineffective corrective actions.
- After a previous NRC inspection identified a noncited violation (NCV) involving the licensee's failure to perform a root cause evaluation to determine the cause of the loss of offsite power induced water hammers and internal corrosion in the essential service water system, the licensee's corrective action addressed the screening criteria for the condition and failed to perform an adequate evaluation. The licensee failed to restore compliance to NCV 05000482/2009007-003, "Failure to Correctly Screen ESW Piping Leaks for Significance," and, as a result, the team is issuing a cited violation for this failure (4OA2.5e).
- The licensee failed to take appropriate corrective actions to previously identified deficiencies involving the failure to translate into procedures appropriate design basis criteria for the nitrogen accumulators for the atmospheric relief valves. As a result, the inspectors identified an NCV involving additional failures (Section 4OA2.5h).

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors examined the licensee's program for reviewing industry operating experience, including reviewing the governing procedure and self-assessments. The team reviewed a sample of condition reports examining operating experience documents that had been issued during the assessment period to assess whether the licensee had appropriately evaluated the notification for relevance to the facility. The inspectors also examined whether the licensee had entered those items into their corrective action program and assigned actions to address the issues. The inspectors reviewed a sample of root cause evaluations and significant condition reports to verify if the licensee had appropriately included industry operating experience.

b. Assessment

Overall, the inspectors determined that the licensee had appropriately evaluated industry operating experience for relevance to the facility, and had entered applicable items in the corrective action program. Both internal and external operating experience was being incorporated into lessons learned for training and pre-job briefs.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed a sample of licensee self-assessments and audits to assess whether the licensee was regularly identifying performance trends and effectively

addressing them. The inspectors also reviewed audit reports to assess the effectiveness of assessments in specific areas. The specific self-assessment documents and audits reviewed are listed in the attachment.

b. Assessment

The inspectors concluded that the licensee had an effective self-assessment process. Licensee management was involved in developing the topics and objectives of self-assessments. Attention was given to assigning inspectors members with the proper skills and experience to do an effective self-assessment and to include people from outside organizations. Audits were self-critical and identified deficiencies in various programs such as the corrective action program and several root cause evaluations.

.4 Assessment of Safety-Conscious Work Environment

a. Inspection Scope

The inspection team conducted four focus group sessions consisting of approximately 10 individuals randomly chosen. Focus groups were conducted with individuals from operations, maintenance, planners, and system engineers. These sessions were designed to elicit a qualitative assessment of the degree to which the participants believed Wolf Creek Generating Station management had established and maintained a safety conscious work environment and were based upon the NRC's definition of a safety conscious work environment:

An environment in which employees feel free to raise safety concerns, both to their management and to the NRC, without fear of retaliation and where such concerns are promptly reviewed, given the proper priority based on their potential safety significance, and appropriately resolved with timely feedback to employees.

Focus group participants were also asked questions in order for the team to make a qualitative assessment of Wolf Creek Generating Station's safety culture as defined by the crosscutting aspects described in NRC's Manual Chapter 0310. The team also reviewed the results of the licensee's 2008 and 2010 Nuclear Safety Culture Assessment results. In particular, the inspectors reviewed licensee actions related to issues to reverse the trend of a substantive crosscutting issue in the area of problem identification and resolution involving Wolf Creek Generating Station personnel's ability to thoroughly evaluate and prioritize problems such that the resolutions effectively address the causes and extent of conditions. The NRC has identified four consecutive assessment cycles with this substantive crosscutting issue.

comfortable raising concerns in each of the avenues available to them including raising concerns with the NRC. Workers who had been at the site many years knew the Wolf Creek Generating Station Ombudsman because the Ombudsman is a long time employee. Newer employees were also aware of the Ombudsman.

Wolf Creek Generating Station's 2010 Nuclear Safety Culture Assessments identified several issues which were entered into the licensee's corrective action program. Some of the findings dealt with the substantive crosscutting issue involving Wolf Creek Generating Station personnel's ability to thoroughly evaluate and prioritize problems such that the resolutions effectively address the causes and extent of conditions. For example, Condition Report 24196 reviewed the finding that some station personnel believe root cause analyses are not effective in identifying the fundamental causes of events. The licensee's evaluation of this finding noted the substantial improvements that had been made to the station's performance in conducting root cause evaluations which occurred in 2009. These improvements included training for evaluators, dedicating a team of trained individuals instead of a single individual to perform these evaluations, assigning a manager to each root cause evaluation, and additional senior management oversight over the evaluations. The licensee has seen 100 percent corrective action review board approval of root causes since the beginning of 2009. The condition report stated that the results of these improvements were not widely communicated to all employees. In addition, the condition report noted that communications of the root cause evaluations (the causes and the corrective actions) were not communicated to station personnel. As a result, the corrective action was to develop corporate communication strategies. The condition report was closed on June 15, 2010, after procedure changes were made to improve station communication of root cause evaluations and corrective actions. Based on this, the team concluded that Wolf Creek Generating Station management believed its workers' perceptions were in error related to the effectiveness of the cause evaluations.

The team noted that on January 23, 2010, the licensee initiated Condition Report 23032 which was a root cause evaluation dealing with the significant human and corrective action performance gaps. The condition report also noted that Wolf Creek Generating Station has had four consecutive assessment cycles of the substantive crosscutting issue in the area of problem identification and resolution involving Wolf Creek Generating Station personnel's ability to thoroughly evaluate and prioritize problems such that the resolutions effectively address the causes and extent of conditions. The condition report also noted that Wolf Creek Generating Station is on the threshold of exceeding more than three crosscutting aspects in other human performance and problem identification and resolution themes. The licensee's corrective actions associated with Condition Report 23032 were intended to reverse the trend of substantive crosscutting issues.

In May 2010, Wolf Creek Generating Station performed a self-assessment which concluded that several root cause evaluations, including the root cause evaluation associated with Condition Report 23032, had deficiencies with the causes or the corrective actions. Therefore, the licensee undertook an effort to re-perform the root cause evaluations. As of the close of this inspection, the licensee had not completed the root cause evaluation and, as such, the team could not review the licensee's plans to address the substantive crosscutting issue. The team also noted that the deficiencies found in these root cause evaluations could reinforce workers' perceptions that cause evaluations were not effective in identifying the fundamental causes of events.

.5 Specific Issues Identified During This Inspection

a. Failure to Resolve Degraded Conditions in a Timely Manner

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to assure that conditions adverse to quality were corrected in a time frame commensurate with the safety significance of the condition. Specifically, the licensee failed to resolve degraded or nonconforming conditions at the first available opportunity or appropriately justify a longer completion schedule.

Description. During the inspection, numerous adverse conditions were identified associated with safety-related structures, systems, or components and that were initially identified prior to restart from Refueling Outage 17 on November 21, 2009. Examples of these degraded or nonconforming conditions included degraded atmospheric relief valve discharge line silencer, essential service water system water hammers and internal corrosion, vibration associated with essential service water system Valves EFV58 and EFV90, fisher butterfly valves, and essential service water system pump room penetration seals. The inspectors also observed that the Operability Evaluation Database listed 23 items that were evaluated as operable by a prompt operability determination prior to the start of the last refueling outage. Further, the inspectors identified that the licensee had no formal method to track and correct degraded or nonconforming conditions that were only reviewed by an immediate operability determination.

Regulatory Information Summary 2005-20, associated with Inspection Manual, Part 9900: Technical Guidance, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," dated April 16, 2008, describes the appropriate time frame for correcting degraded or nonconforming conditions as the first available opportunity (i.e., prior to restart from the next outage). If corrective actions cannot be implemented at the first available opportunity, then the licensee should appropriately justify a longer completion schedule. For the degraded or nonconforming conditions described above, the inspectors concluded that the licensee had not implemented a timely schedule for completing corrective actions for structures, systems, and components, to correct the conditions adverse to quality prior to restart after Refueling Outage 17 on November 21, 2009, or appropriately justify a longer completion schedule.

On December 17, 2009, Condition Report 22501 was initiated to document issues associated with Violation 05000482/2009005-11. One of the issues communicated to the licensee by the NRC senior resident inspector was the lack of timely corrective actions for degraded condition associated with the violation. Further, the inspector explained that the timeframe in which corrective actions should be implemented for degraded or nonconforming conditions was described in Regulatory Information Summary 2005-20. The licensee's evaluation identified that there was not adequate procedural guidance to assure that degraded or nonconforming conditions were resolved at the first available opportunity or appropriately justify a longer completion schedule. The licensee identified corrective actions for interim guidance, until additional procedure guidance could be developed. Also, a review was in-progress to review for degraded, nonconforming, or unanalyzed conditions to ensure that any items that have been delayed or not completed have proper justification for delayed implementation of corrective actions based on the risk. The licensee initiated Condition Report 27071 to further evaluate the adequacy of tracking methods used for degraded, nonconforming, or unanalyzed conditions.

Analysis. The inspectors determined that the failure to take timely corrective actions for conditions adverse to quality was a performance deficiency. The deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of human performance associated with the component of resources because the licensee failed to provide adequate procedures to assure timely resolution of degraded or nonconforming conditions [H.2(c)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, prior to November 21, 2009, the licensee failed to assure that conditions adverse to quality were corrected in a time frame commensurate with the safety significance of the condition. Specifically, the licensee failed to resolve degraded or nonconforming conditions at the first available opportunity, which was prior to restart after Refueling Outage 17 on November 21, 2009, or appropriately justify a longer completion schedule. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Reports 22501 and 27071, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000482/2010006-01, "Failure to Resolve Degraded Conditions in a Timely Manner."

b. Scaffolding Installation Inadequacy

Introduction. The inspectors identified a Green NCV of Technical Specification 5.4.1.a for failure to properly implement Procedure AP 14A-003, "Scaffold Construction and Use," Revision 17, when scaffolding was erected near operable safety-related equipment. The inspectors identified four instances where the minimum separation distance between scaffolding and safety-related components was less than the minimum allowed by procedure and an approved engineering evaluation to justify the deviation was not performed.

Description. On July 14, 2010, during a walkdown of the component cooling water system with the system engineer, the inspectors identified scaffolding erected less than 1 inch from safety-related piping. The inspectors reviewed Procedure AP 14A-003, which included installation and use guidelines for seismically qualified scaffolding, and observed that the criteria included a 2 inch minimum clearance requirement between scaffolding and sensitive safety-related or special scope equipment and/or components. Further, this minimum clearance could be reduced to 1 inch between scaffolding and piping with diameter equal or greater than 3 inches. When the criteria for seismically qualified scaffolding could not be met, an engineering evaluation was required. The inspectors reviewed Scaffolding Request 10-S0109, documented on Form APF 14A-003-01, and observed that an engineering evaluation and post-installation inspections had not been completed. The inspectors concluded that the scaffolding observed on July 14 did not meet the clearance criteria of Procedure AP 14A-003 and did not have an engineering evaluation. The system engineer initiated Condition Report 26752 to document the inspectors' observation. The scaffolding was modified to meet the requirements of Procedure AP 14A-003. The extent of condition associated with the condition report noted that the condition could exist on other scaffolding near safety-related equipment. Consequently, on July 14, 2010, the licensee performed a walkdown of all scaffolding erected around safety-related equipment to verify compliance with the requirements of Procedure AP 14A-003.

On July 15, 2010, during a walk down of the essential service water system with the system engineer, the inspectors identified another instance where scaffolding was erected less than 1 inch from safety-related piping with diameter greater than 3 inches. The condition observed by the inspectors was added to Condition Report 26752. The inspectors questioned why this additional scaffolding problem was not identified during the extent of condition review in response to the inspectors' July 14 observation. Maintenance personnel stated that the control side was not inspected as part of the extent of condition walk down, so this scaffolding was not verified. Based on the inspectors' additional observations, the licensee performed a more extensive walkdown on July 16 which identified two additional installed scaffolding that may not have the minimum clearances required by Procedure AP 14A-003. These two additional scaffolding issues were documented in Condition Report 26752. All scaffolding was modified to meet the requirements of Procedure AP 14A-003.

On July 28, 2010, during a walkdown of the essential service water system pump house with the system engineer, the inspectors identified two instances where scaffold to instrument tubing clearance was less than the 2-inch minimum clearance requirement of Procedure AP 14A-003, and no engineering evaluations had been performed for the conditions. The system engineer initiated Condition Report 27010 to document the inspectors' observation. The scaffolding was modified to meet the requirements of Procedure AP 14A-003.

A previous NCV (NCV 05000482/2009005-12) was identified when component cooling water Train B was in contact with a seismically unqualified scaffold while component cooling water was required to be operable. One of the causes identified was associated with failing to properly fill out Form APF 14A-003-01. This indicates the licensee has been challenged with correcting scaffolding issues.

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

Enforcement. Technical Specification 5.4.1.a requires that procedures be established, implemented and maintained as recommended in Regulatory Guide 1.33, Appendix A. Section 9.a of Appendix A, requires, in part, that maintenance affecting safety-related equipment be accomplished in accordance with procedures. Procedure AP 14A-003 "Scaffold Construction and Use," Revision 17, step F.4.1, required a 2 inch minimum clearance between scaffolding and sensitive safety-related equipment, such as, instrument tubing lines. The minimum clearance could be reduced to 1 inch between scaffolding and safety-related piping with diameter equal or greater than 3 inches. Procedure AP 14A-003, step F.4.2, required an engineering evaluation of the scaffolding if these clearances could not be met. Contrary to the above, on July 14, 15, and 28, 2010, the inspectors identified four examples where the separation distance between scaffolding and safety-related components was less than the minimum allowed by procedure and an approved engineering evaluation to justify the deviation was not performed. Specifically, the inspectors identified two scaffold poles that were less than 1 inch from the component cooling water and essential cooling water system piping with diameter greater than 3 inches. The inspectors also identified two locations where scaffold poles were less than 2 inches from essential service water system instrument tubing. The licensee inspected other scaffolding erected near safety-related equipment

and identified two additional instances where the separation distance between scaffolding and safety-related components was less than the minimum allowed by procedure. Because the finding is of very low safety significance and has been entered into the corrective action program as Condition Reports CRs 26752 and 27010, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000482/2010006-02, "Scaffolding Installation Inadequacy."

c. Control Room Deficiency Tracking

Introduction. The inspectors identified a Green Finding for the failure of operations personnel to follow Procedure AI 22A-001, "Operator Work Arounds/Burdens/Control Room Deficiencies," Revision 8, to adequately identify, document, and track control room deficiencies associated with instruments and controls to ensure proper prioritization and timely corrective actions.

Description. On July 16, 2010, the inspectors performed a walkdown of the main control room area. The inspectors observed small blue, round magnets, labeled "WR" at various locations on the main control boards. When asked, the reactor operator informed the inspectors that the magnets were called "Buttons", and they were used to identify control board components that had work requests written against them, and were placed near the affected equipment. The inspectors estimated that approximately 52 WR buttons were on the control boards, and observed that it was not clear which WR button corresponded to which control board component since there was no information provided on the button. The inspectors were informed that the buttons were implemented several years ago as a method to reduce control board clutter by replacing larger tags that hung from the control boards with the small blue magnets.

The inspectors questioned the reactor operators how they were able to determine the equipment issue associated with a WR button. Operations personnel stated that the information could be retrieved from various methods, including a review of the control room tag book. The control room tag book, located in the shift manager's office, contained work request tags that tracked the open work requests written against control room equipment. The inspectors reviewed the control room tag book and observed that not every WR button had a corresponding work request tag and several tags did not have corresponding WR buttons.

The inspectors reviewed Procedure AI 22A-001, "Operator Work Arounds/Burdens/Control Room Deficiencies," Revision 8, and noted that a control room deficiency was defined as, "A deficiency involving components in the control room such that the indication in the control room does not accurately reflect actual plant condition or the direct control room control is hindered." Procedure AI 22A-001 also directed that control room deficiencies be monitored to ensure the following: (1) the item meets the definition of control room deficiency; (2) the proper priority has been assigned; and (3) the items are progressing to completion in a timely manner.

The inspectors reviewed the control room deficiency log and determined that only eight items were categorized as control room deficiencies. The inspectors concluded that numerous open work requests met the definition of a control room deficiency, as defined in Procedure AI 22A-001, but were not listed in the control room deficiency log. Further,

the inconsistent methods used to track control board component issues, such as, WR buttons, a control room tag book, an information tag book, and the control room deficiency log, have resulted in deficient equipment conditions that were not receiving the appropriate prioritization and were not being corrected in a timely manner. For example, the inspectors noted that one work request tag has been open since 2005 without correction or appropriate justification.

The absence of information and the inability to determine which WR button was associated with which control board component issue was a concern to the inspectors. Specifically, the inconsistent method used to track control board component issues was a concern since important information may not be readily available to operations personnel while trying to diagnose proper equipment and plant response during routine and nonroutine operations. The ability to appropriately diagnose proper response during nonroutine operations, such as, alarm, abnormal, or emergency response situations was of particular concern. Operations personnel initiated Condition Report 27034 to document this concern in the corrective action program.

Analysis. The inspectors determined that the failure of operations personnel to follow administrative requirements for control room deficiency monitoring to ensure proper prioritization and timely corrective actions was a performance deficiency. The deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern, in that, the deficient condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The finding is associated with the Mitigating Systems Cornerstone. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with numerous equipment issues and associated human performance aspects that might impact equipment operation. Using Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," the finding is determined to have very low safety significance because there was no adverse impact to plant equipment. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the component of corrective action program because the licensee did not identify issues completely, accurately, and in a timely manner commensurate with their safety significance [P.1(a)].

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance because the administrative procedure to track control room discrepancies is not required by technical specifications. The licensee entered the finding into the corrective action program as Condition Report 27034 to evaluate the issue and identify corrective actions. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as FIN 05000482/2010006-03, "Control Room Deficiency Tracking."

d. Failure to Update an Operability Evaluation

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of operations and engineering personnel to follow procedures and adequately evaluate degraded conditions to support operability decision-making.

Description. The inspectors reviewed Operability Evaluation OE EF 09-007 to determine the adequacy of the evaluation to address essential service water system degraded conditions. The inspectors also reviewed the operability evaluation to determine whether it met the requirements of Procedure AP 26C-004, "Technical Specification Operability," Revision 20, OTSC 09-0103, and Procedure AP 28-001, "Operability Evaluations," Revision 17, OTSC 10-0029.

Operability Evaluation OE EF 09-007, Revision 0, was initiated on September 24, 2009, to support the operations shift manager's determination of operability for the essential service water system (See NCV 05000482/2009007-02). The operability evaluation compiled the issues associated with essential service water system water hammer susceptibility and mitigation for determination of continued operability of the system. Revision 0 of the operability evaluation specifically addressed the effects of pressure transients as a result of essential service water pump starts and the combined effects of corrosion in essential service water piping. The inspectors observed that the operability evaluation primarily focused on the effects of water hammer on only the four containment cooling units. The operability impact of the degraded water hammer susceptibility condition for other safety-related essential service water structures, systems, and components was partially considered, in that previously performed engineering reviews, operations procedures, and testing practices were credited as the basis for system operability. The operability evaluation also considered essential service water corrosion as evaluated in Apparent Cause Evaluation Condition Report 18785, which determined that the previous through wall leakage events were a result of localized pits that continued to propagate, over a period of time, from the inner pipe diameter until the corrosion was through wall. The apparent cause evaluation concluded that of the three major types of localized corrosion (crevice corrosion, under-deposit corrosion, and microbiological influenced corrosion), under-deposit corrosion was the cause of the pitting found at Wolf Creek Generating Station; and that the nature of the pitting was understood and documented. Microbiological-induced corrosion was determined to be minimal due to the chemical control measures in place.

Operability Evaluation OE EF 09-007, Revision 1, was initiated on June 29, 2010, to address the affects of localized pitting corrosion from inside the piping resulting in through wall leaks. The revised operability evaluation identified a through wall leak that developed on June 29, 2010, which was determined to be degraded, but operable, through application of Code Case N-513-2. The revision also discussed testing performed as a corrective action from Apparent Cause Evaluation Condition Report 18785 for the evaluated corrosion mechanism, and referenced Project Report WCN005-PR-01, "Analysis of Water Hammer Issues," Revision 0, that was completed on March 8, 2010. The operability evaluation stated that no immediate concerns were identified during review of the project report.

The inspectors reviewed Apparent Cause Evaluation Condition Report 21127, which was initiated on October 24, 2009, to document the identification that essential service water system piping welds and/or their heat affected zones may be affected by a corrosion mechanism different than the typical under deposit pitting corrosion generally seen at Wolf Creek. This condition was identified during destructive examination of a portion of essential service water piping associated with a through wall leak that occurred on July 27, 2009. The apparent cause evaluation concluded, in part that: (1) pipe wall thinning specifically and uniquely at welds had not been a noted issue with essential service water piping prior to this event; (2) the through wall leak resulted from a combination of erosion and corrosion; (3) turbulence is adding an erosion mechanism; (4) the essential service water pipe wall-thinning program does not give direction to look at wall thinning under welds, or potential wall thinning at weldolets; (5) recent history at Wolf Creek indicates that large bore piping may be more susceptible to through wall leaks than small bore piping; and (6) past history indicates piping exhibiting low and no flow rates may be more susceptible to through wall leaks.

The inspectors reviewed metallurgical investigation reports dated October 27, 2009, and November 25, 2009, performed outside the corrective action program. The inspectors observed that both reports concluded that the cause of the corrosion that resulted in the July 27, 2009, and another 30 inch diameter essential service water pipe leak was most likely caused by microbiologically induced corrosion. The report further concluded that tubercles formed on the surface of the piping inner diameter which covered the underlying bacteria on the metallic surface. This helped to shield it from the antimicrobial chemicals and biocides that were used to chemically control water and prevent this corrosion mechanism. Once this under deposit corrosion was protected, the area experienced extremely localized and likely rapidly progressing corrosion.

The inspectors reviewed internal operating experience that was relevant to the essential service water system degraded condition and found that it had not been fully considered in Operability Evaluation OE EF 09-007, Revisions 0 and 1. On August 19, 2009, a leak of approximately 20 gpm from the essential service water system piping occurred on the 1988' elevation level of the auxiliary building concurrent with a loss of offsite power event. This leak was identified by the NRC resident inspectors since Procedure STN PE-040G, "Transient Event Walkdown," did not identify the essential service water system as vulnerable to off-normal dynamic forces (NCV 05000482/2009007-06). The leak was identified when the resident inspector noted 1 to 3 inches of water buildup on the floor one level below the elevation where the leak had occurred 7 hours earlier. During the refueling outage that concluded on November 21, 2009, and subsequent to initiation of emergency safety features actuation systems testing, two components connected to the essential service water system experienced leaks. One was the result of an extruded gasket on the residual heat removal Train A pump room cooler. The second leak was due to a split in a dissimilar metal joint in Containment Cooler SGN01C. The inspectors concluded that these internal operating experience events illustrate that previous corrective actions credited in Operability Evaluation OE EF 09-007 have been ineffective, and the locations of water hammer induced leaks following loss of offsite power events are largely unpredictable.

The inspectors reviewed Project Report WCN005-PR-01, "Analysis of Water Hammer Issues," Revision 0, dated March 8, 2010, and observed that much of the information, including the conclusions and recommendations, were not consistent with previously performed engineering evaluations and calculations described in Operability Evaluation OE EF 09-007. Procedure AP 28-001, step 6.2.6.1.c, required the evaluator to consider consequential failures in the evaluation of the deficiency when discussing the systems capability of performing specified safety functions. The inspectors concluded that Operability Evaluation OE EF 09-007, Revisions 0 and 1, failed to consider the consequential failure of safety-related equipment adjacent to essential service water structures and components that were susceptible to water hammer induced leakage as a result of the degraded condition.

On July 29, 2010, the inspectors' observations were communicated to licensee. Operability Evaluation OE EF 09-007, Revision 2, was completed on July 30, however, the revision only acknowledged that microbiologically induced corrosion was present, but indicated that past history shows that bacteria were not an aggressive contributor to corrosion due to chemical controls. On August 10, the inspectors informed the licensee that Operability Evaluation OE EF 09-07, Revision 2, was still inadequate. As a result, the licensee completed Revision 3 on August 12, 2010, to document an adequate basis for operability. Condition Report 27288 was initiated to evaluate the failure to perform adequate operability determinations.

Procedure AP 26C-004, "Technical Specification Operability," Revision 20, OTSC 09-0103, Section 6.1, required that identified deficiencies that could affect the operability of a structure, system, or component subject to technical specifications be evaluated for operability. However, there was no specific procedure guidance to ensure that new information which challenges/changes the assumptions or basis for previously performed operability determinations, be presented to operations personnel to evaluate the condition and assure the continued reasonable expectation for operability.

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

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings and shall be accomplished in accordance with those instructions, procedures, and drawings. The determination of operability for technical specification related systems, structures, and components needed to mitigate accidents was an activity affecting quality and was implemented by Procedure AP 26C-004, "Technical Specification Operability," Revision 20, OTSC 09-0103. Procedure AP 28-001, "Operability Evaluations," Revision 17, OTSC 10-0029, provided instructions and guidelines to engineering personnel for performing operability evaluations in support of the prompt operability determination required by Procedure AP 26C-004. Contrary to the above, from September 25, 2009, through August 12, 2010, operations and engineering personnel failed to implement Procedure AP 26C-004, Section 6.1, to adequately evaluate the operability of a degraded essential service water system. Specifically, operations and engineering personnel failed to adequately evaluate the operability of the essential service water system when relevant new information was identified that challenged a previously performed operability determination and challenged the reasonable expectation for operability. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report 27288, this violation is being treated as an NCV, consistent with Section VI.A of the Enforcement Policy: NCV 05000482/2010006-04, "Failure to Update an Operability Evaluation."

e. Failure to Perform Adequate Evaluation for Significant Conditions

Introduction. The inspectors identified a Green cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to perform an adequate evaluation to determine the cause and take corrective actions to preclude repetition of a significant condition adverse to quality associated with loss of offsite power induced water hammers and internal corrosion in the essential service water system.

Description. On December 4, 2009, the NRC completed a special inspection to examine activities associated with the station's performance during a loss of offsite power on August 19, 2009. During the inspection, NCV 05000482/2009007-03, "Failure to Correctly Screen ESW Piping Leaks for Significance," was identified for the failure to correctly screen for significance occurrences of water hammer damage and essential service water piping corrosion that resulted in system damage. Because of the failure to correctly screen the issue for significance, the licensee did not perform a root cause analysis to evaluate the additive effect of documented loss of offsite power induced water hammers and internal corrosion. The licensee entered the finding into the corrective action program as Condition Report 22239.

The inspectors reviewed the apparent cause evaluation to Condition Report 22239 and noted that the evaluation was primarily focused on the significance screening issue of concern. The screening error for Condition Report 18785 was not corrected, and consequently, no root cause evaluation was performed for the significant condition adverse to quality.

The inspectors reviewed the corrective action documents, project plans, and metallurgical investigation reports, associated with the water hammer and internal corrosion issues to determine the evaluation adequacy for the significant essential service water system problems. The inspectors also reviewed the action and project plans to determine the adequacy of identified corrective actions to preclude repetition of the significant condition. The inspectors determined that the licensee failed to fully identify the cause of the condition and identify adequate corrective actions within the corrective action program. Section 4OA2.5(d) of this report (the previous section) documents NCV 05000482/2010006-04 and provides the technical description of the essential service water system corrosion and water hammer degraded conditions. Based on a review of the technical information, the inspectors determined that the licensee has pursued a symptom-based approach, both inside and outside the corrective action program, to evaluate and correct the different aspects of the issues. However, the information has not been assembled and considered in a single cause determination which evaluates the additive effect of documented loss of offsite power induced water hammers and internal corrosion, from which the licensee can develop well-justified corrective actions to preclude repeated essential service water system damage.

The licensee initiated Condition Report 27212 to document the failure to perform an adequate evaluation for the significant essential service water system deficiencies. Condition Report 26466 was in progress to perform a root cause evaluation for the identified conditions. Additionally, Condition Report 27075 was initiated to evaluate the failure to properly respond to NCV 05000482/2009007-03.

Analysis. Inspectors determined that the failure to determine the cause and preclude repetition of a significant condition adverse to quality was a performance deficiency. The deficiency was more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that the cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the component of corrective action program because the licensee failed to thoroughly evaluate problems such that the resolutions address causes and extent of conditions [P.1(c)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires that in the case of significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, from December 4, 2009, through July 29, 2010, the licensee failed to perform an adequate evaluation to determine the cause of loss of offsite power induced water hammers and internal corrosion in the essential

service water system and did not take corrective actions to preclude repetition of additional water hammer events and system leaks. The finding has been entered into the licensee's corrective action program as Condition Reports 27212, 26466, and 27075, to evaluate and correct the identified conditions. Due to the licensee's failure to restore compliance from the previous NCV 05000482/2009007-03 within a reasonable time after the violation was identified, this violation is being cited in a Notice of Violation consistent with Section VI.A of the NRC Enforcement Policy: VIO 05000482/2010006-05, "Failure to Perform Adequate Evaluation for Significant Conditions."

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

Introduction. The team identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to follow the requirements of Procedure AP 26C-004, "Technical Specification Operability," Revision 20. Specifically, the licensee failed to confirm if a deficiency existed with the ability of the ultimate heat sink to perform its safety function.

Description. On July 26, 2010, the NRC reviewed Condition Report 26744, which was initiated on July 14, 2010, and discussed the licensee's failure to budget the money necessary to perform the dredging of the ultimate heat sink channel before its due date of September 2009. The preventive maintenance to dredge the channel is performed on a 5-year frequency and is required to maintain operability of the ultimate heat sink. The licensee did not evaluate the potential deficiency related to delaying the preventive maintenance dredging of the ultimate heat sink because Procedure AP 16B-003, "Planning and Scheduling Preventive Maintenance," Revision 3, allows a 25 percent grace period. As a result, the preventive maintenance is allowed to be performed within 6.25 years before it is considered late. Although Wolf Creek Generating Station personnel had initiated subwork Order 09-319153-000 on August 4, 2009, to perform the dredging, Condition Report 26744 was initiated almost a year later when Wolf Creek Generating Station personnel were concerned that they might miss performing the preventive maintenance within the 6.25 year deadline.

Prior to 2003, the licensee's USAR required annual sedimentation checks in order to determine the annual growth of sediment in the ultimate heat sink. In 2003, the licensee evaluated the sedimentation data in Calculation Z065-C-001, and determined that the ultimate heat sink would remain operable if the channel was dredged every five years and the entire reservoir was dredged every 15 years. As a result, the licensee changed its USAR requirements and suspended annual sedimentation checks.

Calculation Z065-C-001 used 18 years of data and calculated an average annual growth rate in the channel of approximately 3 inches per year. The acceptance criterion is 24 inches of sedimentation growth, and the licensee concluded that sediment would reach a maximum of 18.75 inches when the preventive maintenance (dredging) was performed in 6.25 years. However, the team noted that the sediment level grew 10 inches in 1993, which was an unusually wet year according to lake records kept by the licensee. The licensee believed this was an anomaly and unlikely to recur.

However, in 2002 sediment level grew 8 inches, again possibly due to another wet year. In its USAR change, the licensee did not take into account the conditions that could cause the ultimate heat sink to exceed the 24-inch sediment limit and make it inoperable in less than 6.25 years (e.g., consecutive years of greater than normal precipitation).

The inspectors noted that the last time the licensee actual measured sediment growth was in about 2004.

Wolf Creek Procedure AP 26C-004, step 4.1.1, defined a deficiency as “an all-inclusive term used in reference to any condition or circumstance that reduces the confidence that a structure, system, or component will perform satisfactorily in service.” Step 6.1.3 of the procedure required: “When a potential deficiency affecting plant hardware is identified but the impact on the ability of a structure, systems, or component to perform its specified safety function is not known, then action shall be taken without delay to confirm if a deficiency exists.” On July 30, 2010, the inspectors brought the issue to the attention of the control room operators and questioned the basis for continued operability of the system. The shift manager made a log entry which stated that the licensee did not consider this an actual operability issue, and also entered the issue into the corrective action program as Condition Report 27080. That condition report failed to properly identify the issue as a potential nonconforming condition per Section 4.2 of the Regulatory Issue Summary 2005-20 Operability Guidance and take the appropriate corrective action of determining the current sedimentation depths. The following week, when the inspectors observed that appropriate actions still had not been taken to address a potential safety concern, the inspectors again contacted the control room and discussed the guidance of Regulatory Issue Summary 2005-20 Operability Guidance with the shift manager. At that time, the shift manager took actions to make a log entry noting the nonconformance in control room log and equipment out of service logs. She also directed Condition Report 27080 be revised to include requirements to perform a hydrographic survey of the ultimate heat sink intake channel to verify that sedimentation levels were within design basis and licensing basis required limits. The hydrographic survey was completed on August 14, 2010, and the results were verified and the ultimate heat sink returned to service on August 29, 2010.

Analysis. The failure to implement Procedure AP 26C-004 was a performance deficiency. The inspectors determined that this finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because licensee personnel failed to identify a potential deficiency in the ultimate heat sink in a timely manner [P.1(a)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these

instructions or drawings. Wolf Creek Generating Station Procedure AP 26C-004, "Technical Specification Operability," step 6.1.3 required "when a potential deficiency affecting plant hardware is identified but the impact on the ability of a structure, system, or component to perform its specified safety function is not known, then action shall be taken without delay to confirm if a deficiency exists." Contrary to the above, from September 2009 through July 30, 2010, the licensee failed to take action without delay to determine if a potential deficiency existed that could have affected the operability of the ultimate heat sink when the licensee decided to delay dredging beyond the preventive maintenance frequency of 5 years. Because of the very low safety significance and Wolf Creek Generating Station's action to place this issue in their corrective action program as Condition Report 27080, this violation is being treated as an NCV in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000482/2010006-07, "Failure to Determine if a Deficiency Existed in the Ultimate Heat Sink."

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

Introduction. The inspectors reviewed a self-revealing violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" for failure to promptly identify a degraded equipment condition which resulted in a functional failure of the emergency diesel generator system and a notice of unusual event emergency declaration during a refueling outage.

Description. At 12:06 p.m. on October 22, 2009, during Refueling Outage 17 with the reactor defueled, and the Emergency Diesel Generator B and Transformer XNB02 out of service for planned maintenance, control room operators received an alarm indicating an undervoltage or underfrequency condition on the Emergency Diesel Generator A. Station operators were dispatched to the Emergency Diesel Generator A to investigate and found that the engine had not started. At 12:08 p.m. the Emergency Diesel Generator A was taken out of service for troubleshooting. The licensee determined that a degraded nonsafety-related capacitor was passing ac noise beyond the filtering capability of the dc speed switches, from the local annunciator cabinet power supply to dc speed switches that feed into the emergency diesel generator starting circuit. As a result the speed switches actuated, giving the control system a false indication that the engine was running, and the appearance of undervoltage and underfrequency on the generator. This false indication also disabled the starting capability of the engine because the circuitry assumed the engine was already running. Therefore, the engine would not have started as designed on a loss of offsite power.

The emergency preparedness manager reviewing the situation later observed that it met the criteria for a notice of unusual event, and one was declared at 5:40 p.m. The repairs to the control system were completed at 7:38 a.m. on October 23, 2009, and the notice of unusual event was exited at 7:40 a.m.

Wolf Creek Generating Station entered this condition into the corrective action program as Condition Report 21039 and performed an Apparent Cause Evaluation which determined that the cause of the event was failure to implement preventive maintenance to monitor a known potential equipment degradation of the nonsafety-related capacitor. Electrical noise compromising the dc speed switches was first identified during

troubleshooting in 1991. As a corrective action, a temporary modification (which later became permanent) was implemented to install the nonsafety capacitor to provide the additional noise filtration required. During routine calibration surveillance in December 2006, the dc speed switch could not be properly calibrated. At that time, the as-found ripple voltage across the speed switch was observed to be 1.35V however it dropped to 0.2V when the ac power supply was de-energized. Both the speed switch and the power supply were replaced and the control system began functioning within normal parameters. The speed switch was subsequently bench tested, found to be working properly, and returned to the warehouse for future use. However, the licensee had not identified that the power supply was the cause of the problem; specifically, that over time the nonsafety-related capacitor was becoming a less effective noise filter. If Wolf Creek Generating Station personnel had properly assembled all of the information from the 2006 troubleshooting, they would have identified the capacitor degradation as the cause, and implemented the preventive maintenance activities to monitor capacitor degradation and replace the capacitors in time to preclude future failures of the emergency diesel generator local control system. As part of the corrective actions of Condition Report 21039, the licensee implemented a regular preventive maintenance activity to monitor capacitor degradation. The licensee entered this violation into the corrective action program as Condition Report 27077 and was evaluating the issue.

Analysis. The inspectors determined that the licensee's missed opportunity to identify a degraded equipment condition in December 2006 was a performance deficiency and is reflective of current performance. This issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. A crosscutting aspect was identified in the problem identification and resolution in that the licensee did not thoroughly evaluate problems such that the resolution addressed causes. [P.1(c)]

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to the above, in December 2006, during troubleshooting of an apparent failure of an emergency diesel generator speed switch, Wolf Creek failed to identify the true cause of the engine failure. Specifically, Wolf Creek personnel failed to promptly identify that the condition adverse to quality was a degraded nonsafety-related capacitor. As a result, on October 22, 2009, Emergency Diesel Generator A experienced a failure and caused the plant to declare a notice of unusual event emergency declaration. Because this violation was determined to be of very low safety significance and was placed in the corrective action program as Condition Report 27077, this violation is being treated as an NCV in accordance with Section VI.A.1 of the Enforcement Policy: NCV 05000482/2010006-08, "Notice of Unusual Event Due to Loss of Both Emergency Diesel Generators."

h. Failure to Translate Design Information Into a Procedure

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

Description. During a review of corrective actions associated with the atmospheric relief valve accumulator leakage criteria, the team observed that there were previous recent condition reports noting problems with Calculation KA-03-W, "KA system Back-up Nitrogen Accumulators," Revision 15. Condition Report 15280 had corrective actions to reduce the allowed leakage rate in Procedure STS KA-010, "N2 Accumulator Inservice Check Valve Test," Revision 14, from 80 psi/hour to 70 psi/hour. Revision 15 was revised on June 9, 2010, to include a 17 psi drop in 15 minutes (i.e., equivalent to 68 psi/hour).

The team noted the design basis leakage calculation for the atmospheric relief valve accumulator assumes a consumption rate for the air-operated valves. The licensee has four essentially identical accumulator tanks, and each tank provides air to an atmospheric relief valve, and an auxiliary feedwater flow valve. USAR Table 9.3-1, provides a required bases of three atmospheric relief valve strokes per hour for 8 hours and three auxiliary feedwater valves strokes per hour for 8 hours. The calculation provided the valve pressure usage rates for the valves, and assumed a leakage rate out of the system. The inspectors noted that Calculation KA-03-W included acceptance criteria for a 65 psi/hour drop (equivalent to 16.25 psi/15 minutes), with an assumed initial starting pressure of 700 psi would provide enough pressurized air to stroke the valves for 8 hours. The accumulator system operates with a nominal 750 psi pressure to the accumulator tanks and a low pressure alarm of 670 psi. The inspectors concluded that the criteria contained in Procedure STS KA-010 was inadequate because it did not contain the calculated design basis leakage criteria and the required minimum pressure to start the test into the procedure. The licensee initiated Condition Report 26771 to document the inadequate procedure revision and was developing plans to revise the leakage criteria in the procedure.

The inspectors reviewed the results of previous surveillance tests and noted that the leakage rate was substantially less than the assumed leakage rate of the calculation. Subsequently, the licensee reviewed the calculation and concluded that there was no impact on operability of the atmospheric relief valves. The inspectors reviewed the licensee's analysis and concurred with the determination.

Analysis. The inspectors determined that the licensee's failure to translate design information into procedures was a performance deficiency. This issue was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone and affected the objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, the issue is determined to have very low safety significance

because the finding is not a design or qualification issue confirmed not to result in a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because licensee personnel failed to take appropriate corrective actions to previously identified problems [P.1(d)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that the design basis for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, prior to July 30, 2010, the licensee failed to translate the design bases requirements into adequate procedural criteria. Specifically, Procedure STS KA-010 , "N2 Accumulator Inservice Check Valve Test," Revision 15, did not include the calculated design basis leakage criteria and the required minimum pressure to start the test into the procedure from Calculation KA-03-W, "KA system Back-up Nitrogen Accumulators," Revision 15. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as Condition Report 26771, this violation is being treated as an NCV consistent with Section VI.A.1 of the Enforcement Policy: NCV 05000482/2010006-09, "Failure to Translate Design Information into a Procedure."

4OA5 Other Activities

- .1 (Closed) Licensee Event Report 05000482/2009005-00: Loss of Both Diesel Generators With All Fuel in the Spent Fuel Pool

On December 21, 2009, Wolf Creek submitted LER 2009005 which described a loss of onsite emergency power generation capability which occurred on October 22 and 23, 2009, during Refueling Outage 17. The Emergency Diesel Generator B was out of service for planned maintenance when the Emergency Diesel Generator A failed unexpectedly at 12:06 p.m. on October 22, 2009. This condition resulted in a notice of unusual event emergency declaration. The cause of the failure was actuation of the speed switches due to degradation of the capacitor responsible for filtering out noise on the dc input feed to the annunciators power supply. The annunciator power supply was replaced and the Emergency Diesel Generator A returned to service at 7:38 a.m. on October 23, 2009. Wolf Creek Generating Station determined that the root cause of this event was failure to implement preventive maintenance activities to monitor degradation of the capacitors. Wolf Creek Generating Station performed a hazard barrier-target analysis as part of Apparent Cause Evaluation Condition Report 24356 and determined that they were previously aware the potential for ac noise to adversely impact the speed switch. Since the licensee was aware of the potential for degradation and had missed opportunities to fully evaluate and correct the condition as recently as 2006, and because the event resulted in a loss of diesel generator system safety function and an emergency declaration, the inspectors determined that this event constituted a

self-revealing violation of NRC requirements. Enforcement aspects are discussed in Section 4OA2.5h. This LER is closed.

4OA6 Meetings

Exit Meeting Summary

On July 30, 2010, the inspectors presented the inspection results to Mr. M. Sunseri, President and Chief Executive Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Henry, Acting Plant Manager
S. Koenig, Manager, Corrective Action Program
B. Masters, Supervisor, Design Engineering
B. Muilenburg, Licensing Engineer
G. Pendergrass, Director, Plant Engineering
E. Peterson, Ombudsman
E. Ray, Manager, Quality Assurance
L. Rockers, Licensing Engineer
M. Sunseri, President and CEO
J. Suter, Acting Manager, Design Engineering
J. Yunk, Human Resources Manager

NRC Personnel

M. Hay, Chief, Technical Support Branch

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000482/2010006-05 VIO Failure to Perform Adequate Evaluation for Significant Conditions (Section 4OA2.1.5e)

Opened and Closed

05000482/2010006-01 NCV Failure to Resolve Degraded Conditions in a Timely Manner (Section 4OA2.1.5a)
05000482/2010006-02 NCV Unqualified Scaffolding Erected Near Safety-Related Equipment (Section 4OA2.1.5b)
05000482/2010006-03 FIN Failure to Adequately Monitor Control Room Deficiencies (Section 4OA2.1.5c)
05000482/2010006-04 NCV Failure to Update an Operability Evaluation (Section 4OA2.1.5d)
05000482/2010006-07 NCV Failure to Determine if a Deficiency Existed in the Ultimate Heat Sink (Section 4OA2.1.5f)
05000482/2010006-08 NCV Notice of Unusual Event Due to Loss of Both Emergency Diesel Generators (Section 4OA2.1.5g)
05000482/2010006-09 NCV Failure to Translate Design Information into a Procedure (Section 4OA2.1.5h)

LIST OF DOCUMENTS REVIEWED

CONDITION REPORTS

6347	24190	24192	24194	24187
24188	24189	27034	15402	15968
27010	26782	26752	26752	2008-005459
2008-001660	2008-004983	25709	26671	26670
26673	26672	9688	26658	26659
26306	26784	26466	18785	21127
22710	22798	22239	23446	11951
27071	9414	9728	9729	9753
9756	9812	9989	10234	10318
10327	10369	10534	10556	10643
10674	10710	11022	11297	11309
11760	12257	12321	12398	12857
12862	13021	13771	13166	13470
17144	15447	18025	18467	18497
20187	20190	20374	20380	20378
22628	22546	23446	23459	23586
25457	11487	13374	17752	22310
15521	25901	11951	24194	24196
24351	24096	25134	14112	14113
14177	14779	14827	22874	26930
26744	26744	26930	22874	14827
06107	10369	13021	18467	24194
06165	10534	13166	18497	24196
07247	10556	13374	20187	24268
07495	10643	13470	20190	24288
07930	10674	13711	20374	24336
08067	10710	13720	20378	24337
09414	11022	13771	20380	24339
09519	11297	14038	21039	24351
09728	11309	14112	21077	24356
09729	11487	14113	21775	25134
09753	11760	14177	22310	25457
2008-000865	2008-001599	15280	22127	22980
26990	26771	26773	26767	23032
24196	24351	24194	24189	24192

CONDITION REPORTS

24197	24187	24188	24189	24190
24192	24194	24195	24351	24197
24198	24200			

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
AP 28-001	Operability Evaluations	17
AP 26C-004	Technical Specification Operability	20
AI 22A-001	Operator Work Arounds/Burdens/Control Room Deficiencies	8
AP 22-001	Conduct of Pre-Job and Post-Job Briefs	10
AP 21-001	Conduct of Operations	46
AP 22A-001	Screening, Prioritization and Pre-Approval	11
TMP 09-014	CCW Flow Balance for Trouble Shooting Thermal Barrier Closure	0
AP 21C-001	WCGS Substation	10
SYSKJ-200	Inoperable Emergency Diesel	20
AP 22C-003	Operational Risk Assessment Program	14A
AP 28A-100	Condition Reports	12
AI 28A-010	Screening Condition Reports	5
AP 23L-001	Lake Water Systems Corrosion and Fouling Mitigation Program	2
AP 28-011	Resolving Deficiencies Impacting SSCs	1C
AP 16C-006	MPAC Work Request/Work Order Process Controls	16
AP 23-008	Equipment Reliability Program	4
AP 16-001	Control of Maintenance	6
AI 16B-002	Updating the PM Activity Module	7
AP 26C-004	Technical Specification Operability	20
MPE NE-004	Alternator Inspection	8
AP 16B-003	Planning and Scheduling Preventive Maintenance	8

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
STS MT-023	Ultimate Heat Sink Dam Surveillance Vertical Movement and Sedimentation	4
AP 10-100	Fire Protection Program	15
AP 21C-001	WCGS Substation	10
TMP 04-016	Dredging the UHS	0
AP 22C-002	Work Controls	18
STS AB-201D	Atmospheric Relief Valve Inservice Valve Test	24
STS-AL-201C	Turbine Driven Auxiliary Feedwater System Inservice Valve Test	6A
STS-KA-010	N2 Accumulator Inservice Check Valve Test	15
STS-MS-070	ASME Code Testing of Safety/Relief Valves	18

WORK ORDERS

08-309413-010	10-330408-001	10-330408-008	10-330408-009	10-330408-011
09-321437-000	02236874-001	10-325888-000	10-327384-003	04-262017-000
09-318651-000	04-266919-000	06-289655-000	07-297977-000	08-305497-000
08-307922-001	09-313715-000	09-316986-000	09-317878-000	09-319258-000
09-320005-000	09-320207-000	09-320629-000	09-320688-000	09-321867-000
09-321868-000	09-321869-000	09-320688-000	09-322079-000	09-322094-000
09-322137-001	09-322467-001	09-322607-001	09-322825-000	09-322842-000
09-322843-000	09-322912-001	09-323130-000	09-323159-000	09-319153-000

PROCEDURE CHANGE REQUESTS

53032 53031 52982

OPERATIONAL BURDENS

09-OB111 09-OW101 08-CRD100

<u>CALCULATION NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
KA-03-W	KA System Back-Up Nitrogen Accumulators Capacity Calculation	2

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
M-620-00111-W04	Nuclear Containment Cooling Coil	1W
M-620-00011-W05	Type "R" Coil 31 Tube Face – Carrier Replacement – 6 Row – 4 Pass (1 ½ Circuit)	12/12/07
M-12EG03	Piping and Instrumentation Diagram Component Cooling Water System	09
M-12EG01	Piping and Instrumentation Diagram Component Cooling Water System	16
M-12EG02	Piping and Instrumentation Diagram Component Cooling Water System	19
KD7496	One line diagram	37
10466-A-081-0002-X04	Sonicbar Door Division - Schedule and Elevation	4/14/83
CP 15-1-12C	Vent Silencer Model AAF – Pulsco BDM 78-2	C
CP 9-1-182	¾ 40-C Regulator	F
M-12AB01	Piping and Instrument Diagram Main Steam System	11
M-12AL01	Piping and Instrument Diagram Auxiliary Feedwater System	10
M-12KA05	Piping and Instrument Diagram Compressed Air System	07
M-12KH01	Piping and Instrument Diagram Service Gas System	13

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
M-13KA51	Small Piping Isometric N2 Back-up Gas Supply Auxiliary Building	01

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	System Health Report Essential Service Water	01/01-03/31/10
	System Health Report Component Cooling Water	01/01-03/31/10
APF 21-001-02	Control Room Turnover Checklist	7/16/2010
08-02-OPS	Wolf Creek Quality Assurance Audit Report	3/7/2008
10-S0109	WCGS Scaffolding Request	6
2010-052	Reportability Evaluation Request	8
10-S0069	WCGS Scaffolding Request	5A
10-S0066	WCGS Scaffolding Request	5A
10-S0068	WCGS Scaffolding Request Operator Work Arounds Logs Operator Burdens Logs Control Room Deficiency Logs Control Room Log	5A
	Component Cooling Water System Open Work Orders for EG System Correctives	7/14-15/2010
2005-2525	Performance Improvement Request System Health Report Essential Service Water USAR 3.4.1.1 Flood Protection Measures for Seismic Category I	6
2005-074	USAR Change Request Essential Service Water EF System Correctives	12/14/2005

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
10-010-EF	Temporary Modification Order	00
97-00230	Altran Corporation Technical Report 96227-TR-01	2
09-005-XX	Temporary Modification Order	01
	Safety Monitor Profile Core Damage Frequency versus Time 2010 Work Week 213	
WM06-0011	Wolf Creek Nuclear Operating Corporation Response to NRC Generic Letter 2006-02 "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power"	3/31/2006
	Safety Monitor Profile Core Damage Frequency versus Time 2010 Work Week 211	2
9301 Section 11	Assessment of Risk Resulting from Performance of Maintenance Activities	2/22/2000
2032	Action Plan Detail Report	2/26/2009
OE-EF 09-007	Operability Evaluation Section A – Responsible Engineer	0
OE-EF 09-007	Operability Evaluation Section A – Responsible Engineer	01
OE-EF 09-007	Operability Evaluation Section A – Responsible Engineer	02
WCN005-PR-01	Enercon Project Report Analysis of Water Hammer Issues	A
WCN005-PR-01	Enercon Project Report Analysis of Water Hammer Issues	0
57809	Metallurgical Failure Evaluation of a Corroded 30" Elbow from the Outlet Side of the Self-Cleaning Strainer of an ESW Line	11/25/2009
57652	Metallurgical Investigation of a Corroded 18" Welded Pipe, 150-HBC-18 from a ESW Lake Water Line	10/27/2009
	Essential Service Water Issues Project Plan	0
CCP 9952	MSIV/MFIV Replacement (Mechanical)	14
CCP 10414	ALS MSFIS Controls Replacement	1
C-302	Specification for Suction Dredging the Ultimate Heat Sink	2
TOD No. 0300	Outage of the Benton to Wolf Creek 345 kV Line	7/17/2007
TOD No. 0301	Outage of the Rose Hill to Wolf Creek 345 kV Line	7/17/2007
TOD No. 0302	Outage of the Lacygne to Wolf Creek 345 kV Line	7/17/2007
CKL ZL-004	Turbine Building Reading Sheets	0

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CCP 9952	MSIV/MFIV Replacement (Mechanical)	14
CCP 10414	ALS MSFIS Controls Replacement	1
C-302	Specification for Suction Dredging the Ultimate Heat Sink	2
OE GK-08-004	Control Room AC Unit SGK04B and SGK05B Heat Exchangers	0
OK KJ-08-005	Emergency Diesel Generator	0
	Safety Culture Survey	2008
	Safety Culture Survey	2010
Engineering Disposition,	Vent Silencer ABX0003 Deficiency	7/17/2007
Vendor Manual,	Masoneilan 40 Series Reducing and Back Pressure Regulator Instructions	