



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 EAST LAMAR BLVD  
ARLINGTON, TEXAS 76011-4511

July 22, 2013

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 INSPECTION  
PROCEDURE 95002 SUPPLEMENTAL INSPECTION REPORT  
05000482/2013010 AND ASSESSMENT FOLLOW-UP LETTER**

Dear Mr. Sunseri:

On June 7, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection pursuant to Inspection Procedure 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," at your Wolf Creek Generating Station facility. This inspection included an assessment of your actions to address each of four open substantive cross-cutting issues. The team also performed a limited scope independent safety culture assessment follow-up in accordance with Inspection Procedure 40100, "Independent Safety Culture Assessment Follow up." The enclosed inspection report documents the inspection results, which were discussed during the exit meeting on June 7, 2013, with you and members of your staff.

In accordance with the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was performed to address a Yellow finding with substantial safety significance in the Initiating Events cornerstone which was issued in the third quarter of 2012. This finding resulted in the station being placed in Degraded Cornerstone column of the Action Matrix. This issue was previously documented and assessed in NRC Inspection Reports 05000482/2012009 and 05000482/2012010. The NRC was informed on April 30, 2013, of your staff's readiness for this inspection.

The objectives of this supplemental inspection were to provide assurance that: (1) the root causes and the contributing causes for the risk-significant issues were understood; (2) the extent of condition and extent of cause of the issues were identified; and (3) corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes. This inspection also included an independent NRC review of the extent of condition and extent of cause for the Yellow finding and an assessment of whether any safety culture component caused or significantly contributed to the performance issue. The objectives of the independent safety culture assessment follow-up were: (1) to provide assurance that the licensee recognizes the safety culture cross-cutting component deficiencies that caused or significantly contributed to risk-significant performance issues and repetitive substantive cross-cutting issues; and (2) to assess whether completed and proposed corrective actions should be

considered sufficient and appropriate to address recognized cross-cutting component deficiencies identified during the licensee's independent safety culture assessment.

The objectives of the substantive cross-cutting issue review were: (1) to assess the licensee's cause evaluations for each substantive cross-cutting issue; (2) to assess whether the corrective actions adequately addressed the causes identified; and (3) to assess the effectiveness of corrective actions taken.

The inspectors determined that your staff performed a comprehensive evaluation to identify appropriate causes and corrective actions associated with the Yellow finding. Your staff's evaluation identified the root cause of the issue to be the failure to recognize the risk/consequence of having a vendor perform work on the startup transformer, in accordance with vendor procedures and processes, without an established verification method for ensuring work quality, resulting in an undetected human performance error. The inspectors determined that your staff identified appropriate corrective actions to enhance the station requirements for oversight of supplemental workers performing contract work activities, which, if successfully implemented, appear to be adequate to address the identified performance issues.

The NRC has determined that the inspection objectives stated above have been met. Based on the results of this inspection, the Yellow finding is closed. Therefore, in accordance with IMC 0305, "Operating Reactor Assessment Program," because the Yellow finding is closed and four quarters have passed, we have determined that the performance issues associated with the Yellow finding will not be considered in the Action Matrix after the end of the second quarter of 2013.

As a result of its continuous review of plant performance, including the results of this inspection, the NRC has updated its assessment of Wolf Creek Generating Station's performance. The NRC's evaluation consisted of a review of performance indicators and inspection results. The NRC determined the performance at Wolf Creek Generating Station to be in the Regulatory Response Column of the ROP Action Matrix as of July 1, 2013, due to one performance indicator, the Mitigating System Performance Index – Emergency AC Power System (MSPI – EAC), remaining White. The MSPI – EAC performance indicator will only be considered in the Action Matrix until it returns to Green status. Your actions to address this performance indicator have previously been inspected. Therefore, the NRC plans ROP baseline inspections at your facility for the remainder of the assessment cycle.

The inspectors determined that your staff performed comprehensive evaluations to identify appropriate causes and corrective actions associated with each of four open substantive cross-cutting issues. The corrective actions identified, once fully implemented, appear to be adequate to address the performance issues associated with these cross-cutting areas.

The inspectors also determined that your staff performed a comprehensive evaluation to identify appropriate causes and corrective actions associated with safety culture challenges at the station. The inspectors noted many indications of improvement in safety culture, as well as indications of some remaining challenges in specific areas.

No findings were identified during this inspection.

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 Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

***/RA/***

Neil O'Keefe, Chief  
Project Branch B  
Division of Reactor Projects

Docket: 50-482  
License: NPF-42

Enclosure: Inspection Report 05000482/2013010  
w/Attachment: Supplemental Information

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ADAMS: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		<input checked="" type="checkbox"/> SUNSI Review Complete	Reviewer Initials: NFO
		<input checked="" type="checkbox"/> Publicly Available	<input checked="" type="checkbox"/> Non-Sensitive
		<input type="checkbox"/> Non-publicly Available	<input type="checkbox"/> Sensitive
<b>DRP:SRI/B</b>	<b>DRS</b>	<b>DRP</b>	<b>DRP - TL</b>
T. Hartman	C. Osterholtz	M. Bloodgood	C. Young
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<b>TSB</b>	<b>TSB</b>	<b>DRP/BC:</b>	
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**NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000482

License: NPF-42

Report: 05000482/2013010

Licensee: Wolf Creek Nuclear Operating Corporation

Facility: Wolf Creek Generating Station

Location: 1550 Oxen Lane NE  
Burlington, Kansas

Dates: June 3, 2013 through June 7, 2013

Inspectors: C. Young, Senior Project Engineer (Team Leader)  
T. Hartman, Senior Resident Inspector  
C. Osterholtz, Senior Operations Engineer  
M. Bloodgood, Senior Project Engineer  
E. Ruesch, Senior Reactor Inspector  
E. Uribe, Reactor Inspector

Approved By: Neil O'Keefe, Chief  
Project Branch B  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000482/2013010, 06/03/2013 - 06/07/2013, Wolf Creek Generating Station, Supplemental Inspection (IP 95002); Independent Safety Culture Assessment Follow-up (IP 40100); Substantive Cross-Cutting Issue Follow-up.

This supplemental inspection was conducted by four region-based inspectors and a senior resident inspector. No findings were identified. 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.

### Cornerstone: Initiating Events

The NRC staff performed this supplemental inspection in accordance with Inspection Procedure 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess the licensee's evaluation associated with the failure of a startup transformer due to a failure to follow maintenance procedures, which resulted in a loss of offsite power event at the station in January 2012. The NRC staff previously characterized this issue as having substantial safety significance (Yellow), as documented in NRC Inspection Reports 05000482/2012009 and 05000482/2012010. A follow-up assessment letter dated September 21, 2012, transitioned Wolf Creek to the Degraded Cornerstone Column beginning August 6, 2012, due to one Yellow input in the Initiating Events Cornerstone, and identified the intention to perform Inspection Procedure 95002.

The inspectors determined that the licensee performed a comprehensive evaluation of the issues related to the Yellow finding, which appropriately identified the root cause of the issue to be the failure to recognize the risk/consequence of having a vendor perform work, in accordance with vendor procedures and processes, without an established verification method for ensuring work quality, resulting in an undetected human performance error. The failure to follow maintenance procedures during a maintenance activity in April 2011, resulted in a subsequent failure of the startup transformer and a loss of offsite power during an event on January 13, 2012. The inspectors determined that the licensee identified appropriate corrective actions to enhance the oversight of supplemental workers performing work activities, which appear to be adequate to address the identified performance issue.

In addition to assessing the licensee's evaluations, the inspection team performed an independent extent of condition and extent of cause review and a focused inspection of the site safety culture as it related to the root cause evaluation. The team concluded that the licensee's root cause evaluation and corrective actions, both completed and planned, adequately addressed the extent of condition and extent of cause, and were adequate to address the cause and prevent recurrence. Based on independent inspection, the team also determined that the licensee's assessment of site safety culture contribution to the issue was adequate.

The NRC has determined that the inspection objectives stated above have been met. Based on the results of this inspection, the Yellow finding is closed. Therefore, in accordance with IMC 0305, "Operating Reactor Assessment Program," because the Yellow finding is closed and four quarters have passed, we have determined that the performance issues associated with the Yellow finding will no longer be considered in the Action Matrix after the end of the second quarter of 2013.

The inspectors determined that the licensee performed comprehensive evaluations of the issues relating to each of four open substantive cross-cutting issues. The inspectors determined that the licensee identified appropriate corrective actions to address these issues, which, once fully implemented, appear to be adequate to address the performance issues associated with these cross-cutting areas.

The inspectors also determined that the licensee performed a comprehensive evaluation to identify appropriate causes and corrective actions associated with safety culture challenges at the station. The inspectors noted many indications of improvement in safety culture, as well as indications of some remaining challenges in specific areas.

A. NRC-Identified or Self-Revealing Findings

None

B. Licensee-Identified Violations

None

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA4 Supplemental Inspection (95002)

##### .01 Inspection Scope

The NRC staff performed this supplemental inspection in accordance with Inspection Procedure 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess the licensee's evaluation of a Yellow finding, which affected the initiating events cornerstone in the reactor safety strategic performance area. The inspection objectives were to:

- provide assurance that the root and contributing causes of risk-significant issues were understood
- provide assurance that the extent of condition and extent of cause of risk-significant issues were identified and to independently assess the extent of condition and extent of cause of individual and collective risk-significant issues
- independently determine if safety culture components caused or significantly contributed to the risk significant issues
- provide assurance that the licensee's corrective actions for risk-significant issues were or will be sufficient to address the root and contributing causes and to preclude repetition

The licensee entered the Degraded Cornerstone Column of the NRC's Action Matrix in the third quarter of 2012 as a result of one inspection finding of substantial safety significance (Yellow). The finding was associated with the failure of a startup transformer during a power transient which occurred on January 13, 2012, resulting in a loss of offsite power event at the station. The startup transformer failure was the result of an inadequately performed maintenance activity conducted by contracted workers in April 2011, in which maintenance procedure requirements were not adequately followed. The finding was characterized as having Yellow safety significance, as discussed in NRC Inspection Reports 05000482/2012009 and 05000482/2012010.

The licensee staff informed the NRC on April 30, 2013, that Wolf Creek was ready for the supplemental inspection. In preparation for the inspection, the licensee performed a root cause evaluation (RCE) to identify weaknesses that existed, which allowed for a risk-significant finding and Degraded Cornerstone, and to determine the organizational attributes that resulted in the Yellow finding. The licensee also conducted assessments to determine whether safety culture aspects contributed to the performance issues that led to the Yellow finding.



The inspection team reviewed the licensee's RCE in addition to other associated evaluations conducted in support and as a result of the RCE. The inspection team reviewed corrective actions that were taken or planned to address the identified causes. The inspection team also held discussions with licensee personnel to ensure that the root and contributing causes and the contribution of safety culture components were understood and corrective actions taken or planned were appropriate to address the causes and preclude repetition. The inspection team also independently assessed the extent of condition and extent of cause of the identified issue, and performed an assessment of whether any safety culture components caused or significantly contributed to the finding.

.02 Evaluation of Inspection Requirements

02.01 Problem Identification

a. Identification of the issue (i.e., licensee-identified, self-revealing, or NRC-identified) and under what conditions the issue was identified.

On January 13, 2012, the site experienced a loss of offsite power event. Wolf Creek was operating at 100 percent rated thermal power with no plant evolutions in progress, no transmission switching events occurring, and no severe weather conditions. The licensee determined that the event resulted from two distinct faults. The first fault was on the C phase of the main generator output breaker. The second fault occurred on the B phase of the startup transformer. The inspectors determined that the issue was self-revealing as a pair of failures which caused a plant-level event. The inspectors determined that the licensee's evaluation adequately documented who identified the issue and under what conditions the issue was identified.

b. Issue duration and prior opportunities for identification.

The licensee's root cause evaluation documented that the issue related to the startup transformer fault existed since an inadequately performed maintenance activity was conducted on the startup transformer in April 2011. The evaluation provided a detailed timeline of the maintenance performed, surveillance tests conducted, and corrective actions. The licensee's timeline identified missed opportunities for earlier identification of the issues. The licensee's evaluation determined that previous visual inspections conducted by the licensee did not recognize that the cover to the startup transformer junction box containing the wiring terminations that were the source of the fault could be removed for access to any wiring. The inspectors determined that the licensee's evaluation was adequate with respect to identifying how long the issue existed and prior opportunities for identification.

c. Licensee's documentation of the plant-specific risk consequences, and compliance concerns associated with the issues, both individually and collectively.

The licensee's root cause evaluation concluded that the lack of controls and oversight for contract services caused degraded equipment reliability.

The errors introduced as a result of a failure to comply with maintenance procedure requirements impacted the station's ability to mitigate a switchyard transient and maintain power to electrical buses by transferring power to an energized offsite source. This increased the risk associated with a loss of offsite power initiating event. The licensee's evaluation provided information to describe what actions (e.g. procedure compliance) would have prevented the error from being introduced during maintenance on the startup transformer. The inspectors concluded that the licensee appropriately documented the risk consequences and compliance concerns associated with the issue.

d. Findings

No findings were identified.

02.02 Root Cause, Extent of Condition, and Extent of Cause Evaluation

a. Root and contributing cause evaluation methodology.

The licensee conducted a root cause evaluation to identify the causes for the inadequate workmanship by maintenance personnel that led to the failure to install sleeves for the insulation of exposed wiring, which caused a failure of the startup transformer. The licensee's analysis included: a detailed description of the event, an event timeline and decisions made, a summary of root and contributing causes, a discussion of relevant internal and external operating experience, a discussion of Quality Assurance (QA) oversight activities related to the issues, an extent of condition analysis and resulting actions, an extent of cause analysis and resulting actions, and a safety culture assessment. The licensee's evaluation identified the following direct cause, root cause, and contributing cause associated with the Yellow finding:

- The direct cause for the loss of the Startup Transformer was the Startup Transformer high voltage side current transformer (CT) wires on A and B Phase were shorted
- Wolf Creek did not recognize the risk/consequence of having a vendor perform work, in accordance with vendor procedures and processes, without a Wolf Creek approved verification method for ensuring work quality, resulting in an undetected human performance error
- Wolf Creek personnel, at all levels, failed to implement and enforce the company's accountability model, primarily with respect to procedural use and adherence

The inspection team concluded that the licensee performed a comprehensive and thorough analysis of the issue, using multiple analysis methods that were appropriate to identify root and contributing causes of the events. Two Event and Causal Factor (E&CF) Charts (overview and details) were developed using a detailed Sequence of Events (SOE) report. Fault Tree Analysis, Evidence and Action Matrix, Change Analysis, Barrier Analysis, Why Tree, and Safety Culture Analysis methods were used to identify causal factors and determine corrective actions. A Management Oversight and Risk Tree (MORT) analysis was used to evaluate the completeness of the analysis and to identify or confirm areas of causality.

The inspectors concluded that the licensee's evaluation was adequate to identify appropriate causes.

b. Root cause evaluation level of detail.

The licensee conducted a root cause analysis to evaluate causes for the inadequate workmanship by maintenance personnel that led to the failure of the startup transformer. The licensee's analysis included: a detailed description of the event, an event timeline and decisions made, a summary of root and contributing causes, a discussion of internal and external operating experience, a discussion of Quality Assurance oversight activities related to the issues, an extent of condition analysis and resulting actions, an extent of cause analysis and resulting actions, and a safety culture assessment. The licensee identified one direct cause, one root cause, and one contributing cause related to the failure of the startup transformer along with various interim corrective actions and two corrective actions to prevent recurrence. The licensee evaluation also included numerous actions to address the extent of condition and extent of cause.

The inspectors concluded the licensee's root cause evaluation was adequately performed, and included a level of detail commensurate with the significance of the problem. The inspectors concluded that the identified causes, corrective actions, and actions taken to identify the extent of problems provided evidence of a process that was methodical, in-depth, and comprehensive. The level of detail was reflected in the extensive event timeline and the evaluation attachments of the licensee's root cause evaluation.

The inspectors also noted that the licensee took the additional step to complete an independent evaluation of the root cause evaluation to ensure that it addressed and documented all applicable aspects of the deficiency.

c. Root cause evaluation consideration of prior occurrences and operating experience.

The inspectors confirmed that the licensee's evaluation included a discussion and consideration of similar previous plant trips and loss of offsite power events. The licensee also performed benchmarking efforts to gauge other nuclear plants' responses to applicable generic communications and operating experience regarding current transformer saturation levels.

The inspectors concluded that the root cause evaluation included a thorough review of prior and precursor problems, and properly evaluated internal and industry operating experience. The inspectors did not identify any examples where a review of prior operating experience could have prevented the condition that led to this event from occurring.

d. Evaluation of the extent of condition and the extent of cause.

The licensee's evaluation included an analysis of the extent of condition, which consisted of determining whether the identified conditions could exist in other plant equipment, processes or human performance. In this case, the extent of condition review examined whether other similar inadequate workmanship issues existed on similar equipment.

The licensee determined that inspections of the two remaining similar startup transformer CT junction blocks, as well as similar connections for the three main transformers, were necessary. These inspections were performed as part of the licensee's extent of condition review. This resulted in the identification of other workmanship issues involving the splicing of CT wires for one of the main transformers.

The licensee's evaluation also included the extent of cause for the root cause to determine if other departments or activities involving similar processes could be vulnerable to the root causes identified in the evaluation with respect to control of contractor performed maintenance activities. The licensee identified that the failure to recognize the risk and consequence of having a vendor perform work under their program, without sufficient verification, could have existed for any service labor requisitions and applicable projects. The licensee's evaluation recognized the need to determine whether other supplemental work activities have been performed at the station without proper oversight, and determine whether additional associated latent equipment problems may exist. The licensee initiated a review of work completed by service labor contracts, which included a review of 92 applicable purchase requisitions approved between 2009 and 2012. These were reviewed by the licensee's Quality Assurance organization. The licensee's review did not identify any instances where other activities were performed without appropriate oversight.

Based on a review of the evaluation and discussions with licensee management and staff personnel, the inspectors concluded that the licensee's evaluation addressed the extent of condition and the extent of cause of the problem through a disciplined process. Additional discussion is provided in Section 02.04.

f. Findings

No findings of significance were identified.

02.03 Corrective Actions

a. Appropriateness of corrective actions for each root and contributing cause.

The licensee's evaluation identified a direct cause, a root cause, and a contributing cause, and identified corresponding interim corrective actions, two corrective actions to prevent recurrence, and numerous extent of condition and extent of cause corrective actions. The licensee's evaluation identified a total of 50 corrective actions to address the identified causes. The licensee's principal corrective action to prevent recurrence included revision of station procedural requirements for:

- Oversight of supplemental workers performing contract work activities
- Work order planning
- Work order implementation

The inspectors also determined that the licensee was working with WESTAR, the transmission and distribution company for the local grid, to take actions to improve the overall reliability of offsite power, in light of the event which was a result of this performance deficiency being the third loss of offsite power event that has occurred at the station over the past five years. These actions included the performance of an independent review of all previously identified grid reliability and switchyard enhancements to ensure that industry best practices have been appropriately incorporated. This review resulted in the identification of several "best practices" upgrade projects in areas such as:

preventive maintenance improvement, protective relay scheme upgrades, reconfiguration of substation layout/components and installation of additional switchyard components to increase reliability. The inspectors also noted that the licensee had implemented additional oversight measures to control and coordinate maintenance activities occurring in the switchyard/substation, and that the licensee had taken action to include switchyard components in the station's maintenance rule (10 CFR 50.65) monitoring program.

Overall, the inspectors concluded that appropriate corrective actions were developed to address the identified causes of the performance deficiency.

b. Prioritization of corrective actions with consideration of risk significance and regulatory compliance.

The inspectors determined that licensee has identified numerous (50) corrective actions associated with this issue since the event occurred on January 13, 2011. All but two of these corrective actions had been completed and were closed prior to the beginning of this inspection (June 3, 2013). The two corrective actions remaining to be completed were associated with future business planning actions.

The inspectors concluded the licensee had appropriately prioritized and scheduled corrective actions for the identified direct, root and contributing causes, and had completed them in a timely manner.

c. Schedule for implementing and completing the corrective actions.

As discussed in Section 02.03.b, the inspectors determined that the licensee has completed all but two of the identified corrective actions as of June 3, 2013. The inspectors determined that the assigned schedule for completion dates of these actions was appropriate. Completion dates were assigned for the remaining two corrective actions related to business planning and are expected to be complete later in 2013.

The inspectors concluded that an appropriate schedule was established for implementing and completing the corrective actions.

d. Measures for determining the effectiveness of the corrective actions.

The licensee scheduled an overall effectiveness review to ensure that the problems identified in the root cause evaluation are adequately addressed by the implementation of the corrective actions. The evaluation was scheduled to be performed by December 27, 2013. The inspectors noted that this schedule did not appear to be timely relative to the completion dates of the major corrective actions. The inspectors determined that the licensee used their standard effectiveness review schedule of 6 months following completion of the last action. The inspectors observed that the standard scheduling might not be appropriate for this situation because the significance of the issues and the large number and extent of corrective actions made the need for an effectiveness review desirable, such that prompt changes could be made if needed. However, the inspectors did note that the licensee planned and had already implemented interim effectiveness review actions in the form of QA surveillances for activities involving contractor work oversight.

The inspectors independently assessed the effectiveness of the licensee's corrective actions to improve oversight of contractor work by observing work in progress to install

new essential service water piping and new diesel generators. The inspectors found that the corrective actions implemented have been effective. The licensee personnel observed by the inspectors demonstrated a clear understanding of the oversight requirements and the work being performed by contractors.

The inspectors also reviewed the results of QA surveillances of maintenance activities involving contractor oversight, which had been performed by the licensee as an interim effectiveness review action. QA identified several instances where the corrective actions were not fully effective and identified additional vulnerabilities regarding control of contract services. The inspectors determined that, although the findings identified by QA were not safety significant, the licensee was performing a separate root cause evaluation to address these issues at the time of the inspection. The inspectors observed that this demonstrated a heightened sensitivity to the identification of potential vulnerabilities in this area and a high level of rigor being applied to effectiveness review efforts.

Overall, the inspectors concluded that the licensee had developed adequate evaluation criteria for each corrective action to prevent recurrence, addressed additional interim corrective actions following the results of recent Quality Assurance surveillances, and was tracking completion of the reviews. The inspectors concluded this was appropriate given the implementation schedule and the complexity of some corrective actions.

e. Adequacy of corrective actions to address the Notice of Violation (NOV).

The NRC issued a Notice of Violation, VIO 05000482/2012009-01, to the licensee on September 21, 2012 for the failure to perform maintenance that affected safety-related equipment in accordance with written procedures (ML12265A310). During this inspection, the inspectors confirmed that the licensee's root cause evaluation and corrective actions adequately addressed the Notice of Violation. The licensee restored full compliance by correcting procedures associated with the control of contract services.

The licensee's principal corrective action to prevent recurrence involved the enhancement of station procedural requirements for oversight of supplemental workers performing contract work activities. The inspectors identified a potential vulnerability that existed in the resulting procedures, in that the procedures contained a provision for delegation of the oversight role to "other designated qualified personnel," without any provision to ensure these individuals would be independent of the contracted organization performing the activity. The licensee entered this observation into their corrective action program as Condition Report 69954. Overall, the inspectors determined that the corrective actions taken or planned were adequate to address the NOV that was the basis for the supplemental inspection.

f. Findings

No findings were identified.

02.04 Independent Assessment of Extent of Condition and Extent of Cause

a. Inspection Scope

Inspection Procedure 95002 requires that the inspection staff perform a focused inspection to independently assess the validity of the licensee's conclusions regarding the extent of condition and extent of cause of the issue. The objective of this requirement is to independently sample performance, as necessary, within the key attributes of the cornerstones that are related to the subject issue, to ensure that the licensee's evaluation regarding the extent of condition and extent of cause is sufficiently comprehensive.

The inspectors conducted independent extent of condition and extent of cause reviews of the issues associated with the Yellow finding. The Yellow finding resulted from Wolf Creek Station's failure to follow maintenance procedures in accordance with Work Order 11-240360-006, Revision 3. The inspectors independently reviewed the licensee's actions specified in the root cause evaluation for extent of cause/extent of condition. The inspectors also conducted additional independent sampling of activities, specifically focusing on other documents and work activities where a failure to follow maintenance procedure by contract services would have the potential to contribute to a significant event. The inspectors independently sampled the documentation of selected contracted maintenance activities completed during the most recent refueling outage. The inspectors also observed several work activities which were in progress during the inspection involving station oversight of contracted personnel. The inspectors independently assessed the effectiveness of the licensee's corrective actions to improve oversight of contractor work by directly observing work activities in progress involving the installation of new essential service water system piping, as well as new diesel generators.

In conducting this review, the inspectors interviewed station management and personnel, reviewed program and process documentation, reviewed station program monitoring and improvement efforts, and reviewed corrective action documents.

b. Assessment

The inspectors' independent assessment of the extent of condition/extent of cause determined that the licensee had done a comprehensive job identifying and addressing the significant issues.

Interviews were conducted with station management and personnel to assess the effectiveness of documented actions taken, the understanding of their implementation, as well as the logic and justifications used for the documented extent of condition/extent of cause actions from the licensee's root cause evaluation. The interviews demonstrated a general awareness and adequate implementation of the actions taken.

The inspectors noted that the licensee was in the process of performing a high level evaluation for three different events:

- The loss of offsite power event of January 13, 2012
- The Emergency Diesel Generator Performance Indicator threshold crossing of March 12, 2012
- Previous corrective actions addressed during the 95002 Inspection of May 20, 2011, for the threshold crossings of the Unplanned Scrams per 7000 Critical Hours, Unplanned Scrams with Complications, and Safety System Functional Failures performance indicators

The licensee has established an improvement plan to reinforce the use and effectiveness of the site's Accountability and Culpability models to achieve improved performance. Through interviews with a cross-section of station personnel, the inspectors determined that this model has gained broad acceptance and was being used effectively to drive improvement and higher standards in many different work activities.

The inspector's observations were entered into the corrective action program as Condition Report 69954. Overall, the inspectors' independent assessment concluded that the licensee conducted an adequate RCE with respect to extent of condition and extent of cause.

#### 02.05 Safety Culture Consideration

##### a. Inspection Scope

The inspection team conducted a focused inspection to independently determine whether the licensee's root cause evaluation appropriately considered whether any safety culture component caused or significantly contributed to any risk significant performance issues. The inspectors reviewed corrective actions, training requests, performance indicators, and procedures as part of the assessment. The inspection team reviewed condition reports and procedures, and conducted interviews with licensee personnel.

##### b. Assessment

As part of the collective root cause evaluation, the licensee conducted a safety culture analysis which evaluated the identified direct, root and contributing causes against the safety culture components that could have contributed to the issue.



The inspectors verified that the licensee's root cause evaluation included an assessment and consideration of the applicable safety culture components as they applied to the Yellow finding which affected the Initiating Events cornerstone. The licensee's analysis determined that deficiencies in the following five safety culture aspects that contributed to the performance deficiency:

- H.4.b (Work practices – personnel follow procedures)
- H.1.a (Systematic process for risk-significant decision-making)
- O.4.c (Organizational decisions and actions are consistent with a policy that nuclear safety is an overriding priority)
- H.3.b (Work control – coordination of work activities)
- H.4.c (Work practices – supervisory oversight of work activities)

The inspectors concluded that several safety culture deficiencies provided the underlying conditions that allowed the events of January 13, 2012, to occur. The licensee has had multiple substantive cross-cutting issues (SCCIs) for a prolonged period of time. The current SCCIs were evaluated during this inspection because of their relationship to the Yellow finding, and the results of this review are discussed in later sections of this report. In particular, the SCCIs represented the following safety culture problems:

- Tolerance of longstanding equipment reliability issues and untimely corrective actions for the same
- Willingness of workers to proceed when faced with unclear procedures or documentation, rather than stopping to get the documents corrected
- Evaluations and decision-making performed without clearly identifying all needed information and the assumptions being made
- An operability assessment process that did not track degraded or non-conforming conditions, assess them collectively, or ensure prompt corrective action

The inspection team independently confirmed the licensee's conclusion that improving safety culture behaviors should be a high priority item for the recovery effort. The inspectors concluded that the licensee's analysis appropriately considered the safety culture components.

c. Findings

No findings were identified.

02.06 Evaluation of Inspection Manual Chapter 0305 teria for Treatment of Old Design Issues

The Yellow finding did not involve any old design issues.

4OA5 Other Activities

.1 Assessment of Corrective Action to Address Substantive Cross-cutting Issues

a. Inspection Scope

The licensee's letter dated April 30, 2013, informed the NRC of its readiness for inspection of the following four substantive cross-cutting issues: P.1.c (problem evaluation), P.1.d (timely and effective corrective action), H.1.b (conservative decision-making), and H.2.c (complete and accurate documentation and procedures). Consideration of possible closure of these substantive cross-cutting issues will be further assessed using information from this inspection and guidance in Inspection Manual Chapter 0305.

The inspectors reviewed: whether the SCCIs were entered into the corrective action program (CAP), the causes identified, the corrective actions identified to address those causes, the measures of effectiveness used by the licensee to monitor improvement, and actual data for those effectiveness reviews.

b. Findings and Assessment

No findings were identified.

P.1.c - Problem Identification

Wolf Creek has had an SSCI in P.1.c, problem evaluation, for a total of 5 years. The majority of the licensee's recovery actions which addressed the P.1.c SSCI were accomplished in three main Condition Reports (CRs) in the licensee's corrective action program (CAP): CR 51952 (Latent Organizational Weakness in Management Oversight, 4/25/2012), which included an apparent cause evaluation (ACE); CR 59217 (Perform Collective Significance Evaluation, 10/28/2012), which included a common cause analysis (CCA); and CR 34455 (End of Cycle Letter Identifies Ongoing Substantive Issue, 03/08/2011), which included a root cause evaluation (RCE) and was in response to the 2010 end-of-cycle NRC assessment letter.

The inspectors concluded that the licensee appropriately entered this issue into the CAP.

### P.1.c - Evaluation of Root Causes

The licensee conducted cause evaluations under the CRs referenced above to address this SCCI. In CR 51952, the licensee identified the apparent cause of the SCCI to be: "CAP training has not been fully effective, resulting in a lack of rigor in the extent and depth of analysis, leading to inadequate evaluations." A common cause identified from the issues evaluated in CR 59217 was: "Station leaders and managers have failed to model and consistently drive the individual roles, responsibilities, and accountabilities needed to reinforce Nuclear Safety Culture behaviors within CAP." In CR 34455, the licensee identified a root cause of: "Leadership has not been successful in aligning behaviors for timely problem identification and effective resolution in all areas across the station."

The inspectors concluded that the licensee's evaluations had been effective in identifying the causes for this SCCI.

### P.1.c - Corrective Action

The licensee identified a total of 39 corrective actions to address this SCCI. The inspectors reviewed the key corrective actions taken by the licensee.

The licensee had a contractor provide training to all cause evaluators and Corrective Action Review Board (CARB) members. This training was being tracked in the licensee's training database, and will include annual refresher training. If fully implemented and continued, this training should improve the quality and consistency of cause evaluation products.

The licensee recently implemented improvements in the CARB process. These included developing a stand-alone CARB procedure to establish clearer expectations for CARB reviews (April 24, 2013), revising CAP procedures to increase CARB ownership of corrective actions for significant conditions (August 13, 2012, and subsequent revisions), and implementing divisional CARBs to pre-screen cause evaluation products prior to presentation to CARB (April 24, 2013).

The licensee is revising its CAP procedures, particularly its root and apparent cause evaluation procedures, to make them easier to use. Several interviewees in the safety culture focus groups conducted during this inspection expressed frustration with the complexity of these procedures. Based on interviews with management, the inspectors noted that station leadership had already recognized the difficulty and undertaken improvement efforts.

Licensee management has begun a campaign to communicate to the workforce the changes to CAP and to improve general employee training relative to the CAP. Based on safety culture focus group interviews, the team determined that this communication has been effective as a change management tool.

The inspectors also assessed changes that the licensee had implemented in an effort to improve their processes for evaluating conditions that have the potential to affect operability of plant equipment and systems. The licensee had changed their corrective action program to utilize a sole point of entry for problems, such that a condition report became the single method used to identify and address equipment concerns. The licensee had implemented a requirement for a senior reactor operator (SRO) to evaluate every condition report written and perform an operability determination and/or functionality assessment to evaluate the impact of the identified condition on the capability of plant systems to perform their required safety functions. The licensee had also implemented a process by which Operations department management performs subsequent reviews and assigns grades to every operability/functionality evaluation on a 5-point scale. Any evaluation that does not receive a grade of five requires some sort of feedback or correction. The inspectors observed that the licensee did not have a rigorous process in place to ensure this feedback or correction is performed. The inspectors identified that several evaluations with low scores were not corrected, and that the associated condition reports still had inaccurate information in them. The licensee entered these issues in their corrective action program as Condition Reports 70004 and 70063.

The inspectors concluded that the corrective actions identified were appropriate to address the identified causes.

#### P.1.c - Corrective Action Effectiveness Measures

The inspectors noted that many of the internal metrics being monitored have not yet shown significant improvement. This is largely because of long lead times to see changes in certain metrics, recent process changes that established more challenging standards, and re-baselining of some metrics.

Additionally, after implementing the majority of the corrective actions from the three CRs referenced above, the licensee performed gap analyses to evaluate performance between the original CR initiation and the closure of the actions. As a result of these gap analyses, the licensee added additional actions to incorporate lessons learned during that interim period.

The inspectors also noted that the licensee was tracking the graded results of the operability/functionality assessment reviews in a performance metric. This metric was a 3-month rolling average for each crew and the work control SRO group, and appeared to be adequate to determine the effectiveness of those corrective actions.

The inspectors concluded that the licensee had developed meaningful and challenging measures to apply to the identified corrective actions. Further, the licensee had established high standards and long review periods for metrics such that they would help drive long-term improvement. The recent data generally showed improving trends and prompt re-baselining when significant program changes were made.

### P.1.c - Results

The inspectors observed that the station had made significant progress in revising their guidance to address several concerns previously identified by the NRC and other sources. In particular, the licensee had made extensive efforts to benchmark and incorporate industry best practices into their corrective action program. In addition to the CRs referenced above, other drivers used by the licensee to focus its recent process improvements include the 2012 CAP Audit performed by the licensee's Quality Assurance organization (CR 51952), the 2012 NRC biennial Problem Identification & Resolution inspection (CRs 53445 & 54072), and other self- and third-party assessments.

The inspectors concluded that the licensee appears to have gained a thorough understanding of the scope of its problems with respect to evaluation quality and timeliness. The team confirmed that many of the licensee's changes to the CARB process had improved the quality of both the process and the final products by improving the level and quality of management involvement. The team noted that the combination of training and management involvement was causing active discussions about performance standards and the quality of documentation that had broad benefit. Additionally, the CARB ownership of significant issues was improved. On June 5, 2013, the team observed a CARB review of a RCE and several evaluations of industry recommendations. Based on its observations, the team noted that the licensee's CARB process is effective, but that further improvement is warranted. Specifically, the inspectors observed that the ratings assigned by the CARB for a RCE associated with CR 68393 were not consistent with the deficiencies which were identified in the meeting regarding appropriateness of proposed causes and corrective actions. The inspectors also noted that the metrics for CARB grading of document quality did not reflect situations where a document was initially rejected but subsequently accepted, as only the final grade was tracked. The inspectors also noted that the licensee was still developing the role of Divisional CARBs in driving improved evaluation quality prior to bringing the issues to CARB.

The inspectors concluded that changes to the operability determination and functionality assessment processes, if fully implemented, will improve the quality of the evaluations. The current level of oversight and attention will likely result in sustainable improvement at the station.

The inspectors concluded that, overall, the quality of the licensee's problem evaluation processes improved demonstrably since the biennial NRC Problem Identification & Resolution inspection performed in 2012. The team concluded that the licensee's implemented and planned improvements to the CARB and other CAP processes will likely result in continued improvement.

### P.1.d - Problem Identification

Wolf Creek has had a an SCCI in P.1.d, adequacy and timeliness of corrective actions, SCCI for a total of 3 years. The licensee addressed recovery efforts for the P.1.d SCCI under the same three principal CRs as discussed in the P.1.c sections above: CR 51952 (Latent Organizational Weakness in Management Oversight, 4/25/2012), which included an apparent cause evaluation CR 59217 (Perform Collective Significance Evaluation, 10/28/2012), which included a common cause analysis; and CR 34455 (End of Cycle Letter Identifies Ongoing Substantive Issue, 03/08/2011), which included a root cause evaluation. The inspectors also evaluated the status of the licensee's corrective actions to

address improvements to the preventive maintenance program. The licensee was addressing preventative maintenance program issues affecting equipment reliability in CRs 24445 and 34896. The licensee identified deficiencies in the plant's preventive maintenance program in CRs 24445 and 23119.

The inspectors also evaluated the status of the licensee's corrective actions to address long-standing issues related to deficiencies in the essential service water (ESW) system. The licensee was addressing recovery actions for ESW system degradation issues with Incident Investigation Team (IIT) 10-01 and CR 53443.

The inspectors concluded that the licensee appropriately entered these issues related to the P.1.d SCCI into the CAP.

#### P.1.d - Evaluation of Root Causes

The licensee's cause evaluations associated with the preventive maintenance (PM) program issues affecting equipment reliability identified several causes. The evaluation in CR 34896 determined that causes included: lack of detailed PM scope, inadequate PM implementation, lack of a first time PM implementation strategy, and inadequate management oversight. The licensee determined in RCE 24445 that the content and timeliness of preventive maintenance activities was insufficient to support reliable plant operation. RCE 23119 determined that the root cause for the White safety system functional failures performance indicator was insufficient preventive maintenance. The evaluations for the preventive maintenance program issues were self-critical, and they documented that the preventive maintenance programs did not support reliable plant operation. These corrective actions were incorporated into the licensee's Preventive Maintenance Optimization (PMO) project.

The licensee's cause evaluations associated with the ESW system degradation issues identified the following causes:

- Through-wall leakage developed due to localized pitting developed in low flow areas resulting in leaks during operation at normal system pressure
- Failure to effectively preserve the material condition of systems exposed to lake water, ensure plans and contingencies were in place to respond to underground piping issues
- Failure to effectively prevent pressure transients due to water hammer which resulted in ESW piping leaks
- Management was not effectively developing, overseeing or implementing priorities to ensure regulatory issues are addressed in a timely manner, including actions to address the adverse effects of water hammer in the ESW system

The evaluations for the ESW degradation issues were self-critical, and documented that the station did not effectively address the degrading condition of the ESW system, including the effects of water hammer caused by water column separation with subsequent flow initiation, in a timely manner. The associated corrective actions were incorporated into the licensee's Essential Service Water Replacement and Management Project.

The inspectors concluded that the licensee's evaluations were effective in identifying the causes associated with this SCCI.

#### P.1.d - Corrective Action

The inspectors reviewed the key corrective actions taken by the licensee to address the causes described above. The licensee appeared to have a thorough understanding of the scope of its problems and identified strategies to improve performance. The licensee had a contractor provide training to CARB members. This training is being tracked in the licensee's training database and will include annual refresher training. If fully implemented and continued, this training should improve the adequacy of the identified corrective actions.

The licensee recently implemented a CR Evaluation Challenge Board and a Corrective Action Challenge Board, which were intended to ensure that the actions associated with the CR meet specific qualitative requirements associated with the quality of the action, including timeliness. The inspectors observed a CAP Challenge Board which reviewed action closure for multiple CRs. The inspectors observed that the licensee adequately implemented the performance metrics in accordance with their guidance. The licensee issued two CRs as the result of the board identifying instances of proposed action closure not reasonably addressing and/or work performed not fully satisfying, the action during a meeting observed by the inspectors.

Licensee management began a campaign to communicate to the workforce the changes to CAP and to improve general employee training relative to the CAP. Based on safety culture focus group interviews, the team determined that this communication has been effective.

The licensee increased the awareness and visibility of the current CAP backlog. Having a large backlog of corrective actions demonstrated untimely corrective action and impeded future timeliness. The licensee's division managers were providing weekly backlog reports to the Senior Leadership Review Team which included the status of the CAP backlog reduction curves. This was designed to provide manager accountability for reducing the number of CAP backlog. Current CAP backlog numbers have been reduced since the completion of the last refueling outage.

The inspectors also reviewed the status of the licensee's completion of corrective actions associated with issues that were the subject of the NRC 95002 inspection conducted at Wolf Creek in March 2011 (NRC Inspection Report 05000482/2011006) in order to determine whether the corrective actions associated with these regulatory issues had been completed as planned. No significant discrepancies were identified.

The inspectors also reviewed the status of the licensee's implementation of two major improvement projects – ESW system modifications and the PMO project – to improve the plant's equipment reliability and address multiple open, long-term corrective actions. The ESW improvement project addresses the NRC violation 05000482/2012007-03, "Failure to Take Timely Corrective Action to Preclude Repetition," issued during the 2012 Problem Identification and Resolution (PI&R) inspection (Inspection Report 05000482/2012007).

The associated actions include:

- Installation of a system modification to eliminate adverse effects of water hammer caused by water column separation due to loss of flow and subsequent flow restoration. At the time of the inspection the modification design and approval was still in progress.
- Installation of approximately 30,000 feet of improved underground ESW piping, scheduled for completion. The licensee designed the replacement piping to be thicker and more accessible for condition monitoring. In areas of restricted inspection capability, the replacement piping will be of a material less susceptible to degradation.
- Monitoring the condition of approximately 9,000 feet of above ground ESW piping, with plans to replace approximately 2,600 feet of piping. The licensee was conducting surveys using guided wave technology to monitor and trend the corrosion status in the above ground piping until the piping replacement activities are complete.
- A chemical injection system upgrade was planned to reduce piping corrosion.
- Improved inspection strategies and programs for monitoring the conditions of lake water piping. System fouling, corrosion, and piping inspection program procedures were revised to better address long term ESW system degradation concerns due to chemistry, corrosion, and piping inspection challenges. The licensee's buried piping and tanks program procedure was also revised to include enhanced guidance for actions in response to the identification of leakage in buried ESW system piping.

The licensee has developed a PMO project to identify components most important to normal plant operations and nuclear safety and then develop an improved preventive maintenance program to improve plant equipment reliability. This program was developed in response to recent operating history demonstrating issues with regard to reliable plant operation, including issues captured in CRs 24445 and 23119. The inspectors reviewed the status of associated actions to implement the PMO project, which included:

- Completion of the first of three phases of the PMO project on May 1, 2013. This phase identified the most significant plant components (described as assets), including those included in the systems tracked by the Mitigating Systems Performance Index (MSPI) performance indicator, portions of systems that support MSPI systems, systems that are most likely to cause a plant trip, and a single point vulnerability (SPV) analysis of all systems that could contain a potential SPV. The existing preventive maintenance for these assets was then compared to the PM templates used in an industry best practices guideline. This effort included verifying that vendor recommendations for PM were adequately addressed. This resulted in creating 4,700 new PM activities and improving 2,200 existing PM activities to industry standards.



- The licensee commenced the second phase, which will focus on the optimization of the remaining assets not addressed in phase one. The licensee initially scheduled completion of phase two in December of 2013. However, phase one completion was delayed five months resulting in delays in commencing phase two.
- Phase three will consist of monitoring and reporting of the implementation of the new PM strategies and the status of the mitigation activities for identified SPVs.
- The licensee plans to complete the new PM activities for SPV by February 2015.
- The licensee plans to complete new PM activities for high risk components by October 2016.

By the time of the inspection, the licensee had completed 267 of the new PM activities. The inspectors noted that improvement to plant equipment reliability was dependent on completing the new and improved PM activities, not on completion of the PM documents themselves. The delay in completing the PMO documentation contributed to performing relatively few of the new and improved PM activities during the recently-completed refueling outage. The inspectors determined that the licensee planned to implement the new and improved PM activities over the 4-year period recommended in the industry guideline. However, the inspectors pointed out that the industry guideline did not assume that the licensee was implementing the new PM program to address a known problem with equipment reliability. The inspectors also determined that the licensee did not prioritize implementation of the new and improved PM activities based on the current system health or the safety significance of the assets. The licensee documented this observation in CR 70125 and agreed to consider an implementation schedule that improved the prioritization of new and improved PM activities.

The inspectors also noted that the PMO equipment screening process was previously initiated in 2005. However, the screening and categorization was re-performed during the latest effort because categories had previously been assigned at the system level, which resulted in over-classifying many assets. The licensee identified numerous assets that had not previously had an equipment identification number assigned, and therefore had not been evaluated for needing PM. As a result of more detailed reviews, the number of assets identified, evaluated, and assigned identification numbers increased from 50,000 to 137,000. Much of this increase was due to the identification of electrical components located inside cabinets which had previously only been collectively identified with the cabinet. The licensee identified that these assets included limited-life components, such as relays and capacitors. The inspectors determined that the licensee did not prioritize these components for PM or replacement based on their safety significance or age relative to expected useful life. The licensee entered this into the CAP under CR 70060.

The inspectors also reviewed the licensee's efforts to reduce significant backlogs in maintenance work, engineering work, and the corrective action program. These backlogs contributed to equipment reliability and procedure and document quality. The inspectors noted significant progress in each of these areas.

#### P.1.d - Corrective Action Effectiveness Measures

The licensee was using CAP backlog and Equipment Reliability Performance Indicators to monitor the effectiveness of the corrective actions for the P.1.d SCCI. In addition, the ESW and PMO projects, when implemented, will significantly reduce the number of open long term corrective actions identified in the licensee's CAP. The licensee's goal was to work off the backlog of corrective actions and shift the plant from having the need to perform primarily corrective maintenance to having a predominantly preventive maintenance work load.

The licensee tracked the performance of the PMO project using metrics of monthly status reports and trending and monitoring implementation status. The inspectors reviewed the status of the licensee's implementation of their effectiveness measures and identified that no monthly status reports were completed for February through April 2013. The licensee did complete the status report for the month of May. The inspectors noted that this effort tracked the completion of PM improvement paperwork, rather than completion of actual new and improved PM items in the plant. As such, it was not monitoring the completion of actions that directly improved plant reliability. PM effectiveness was being monitored using the Equipment Reliability Index developed by EPRI, which uses 19 individual weighted indicators.

The licensee's effectiveness measures for the implementation of the ESW project consisted of: successful completion of the ESW below ground piping and water hammer modification by early 2014, zero out-of-service time due to leaking ESW piping, and performance based self-assessments evaluating the effectiveness of inspection and monitoring programs of underground piping and tanks scheduled in 2013. The inspectors noted that these measures were primarily tracking milestone completion, although this was reasonable given that the milestones were replacing degraded pipe with new pipe.

#### P.1.d - Results

The inspectors sampled input data and observed that Wolf Creek had self-critical internal performance measures. The internal metrics for trends in closure of condition reports, corrective action age, and the maintenance backlog show recent positive improvement, but the licensee still had major efforts underway to improve known equipment reliability issues. The licensee had extensive corrective actions in progress that will significantly improve these metrics by reducing the amount of long term corrective action resulting from the degraded condition of the ESW system. The licensee's ESW underground piping replacement, corrosion inhibitor injection system and water hammer modifications are scheduled to be completed by early 2014. Completion of these corrective actions is essential to the licensee's improvement in this area.

The effectiveness of increasing the plant's equipment reliability due to the implementation of the PMO program was difficult to determine because of the relatively low number of new and improved PMs that had been implemented. When fully implemented, the inspectors concluded that plant reliability will be improved, but the implementation schedule for completing the Phase 1 PMs in the plant did not appear timely or appropriately prioritized in light of the known equipment reliability issues.

In response to inspector concerns that certain key equipment reliability issues remain incomplete, the licensee submitted a letter dated June 27, 2013, which committed to complete the following actions by the end of the spring 2014 outage:

- Install a modification to mitigate ESW system water hammer.
- Install and tie-in all below-ground ESW piping.
- Replace a minimum of 1200 linear feet of above-ground ESW piping.

#### H.1.b - Problem Identification

Wolf Creek has had an SCCI in H.1.b, conservative decision-making, for a total of 2 years. Wolf Creek addressed the H.1.b substantive crosscutting issues in three condition reports. Condition Report 23032 included a root cause evaluation completed for a second time in September 2010. Condition Report 23032 was initiated in response to the NRC's identification of problem identification and resolution and human performance SCCIs, which contributed to the licensee's performance that resulted in Wolf Creek being placed in Column 3 of the NRC's Action Matrix. Condition Reports 32092 and 64785 were also generated to specifically address conservative decision-making at the station. The inspectors concluded that the licensee appropriately entered this issue into the CAP.

#### H.1.b - Evaluation of Root Causes

The inspectors determined that the root and apparent cause evaluations conducted to address this SCCI were self-critical, and they documented a lack of management involvement and oversight in effectively overseeing and implementing changes in behaviors to align organizations and priorities. Another contributing cause identified by the licensee in Condition Report 32092 was that the procedure used for directing the creation, review, and approval of basic engineering dispositions did not provide sufficient instructions for making and documenting assumptions. In addition, the Condition Report 64785 evaluation determined that procedural use and adherence practices were weak, and that station leadership did not consistently enforce procedure compliance accountability, allowing some workers to make ill-informed decisions. Also, the licensee identified in Condition Report 64785 that the station had not developed, implemented, trained, or enforced a consistent, well understood position-specific and hierarchical level-specific decision making model. The inspectors concluded that the licensee effectively identified the causes associated with this SCCI.

### H.1.b - Corrective Action

The inspectors reviewed the key corrective actions that were most responsive to the identified root causes. These corrective actions included:

- Conduct human performance training for Wolf Creek personnel and supplemental work force on procedure use and adherence and document quality prior to refueling outage 19 (Condition Report 55574-02; completed February 2013)
- Conduct fundamental training on assessment techniques for operability determinations and evaluations including extent of condition, justification, and rigor (Condition Report 23032-02-40,-49,-50; completed March 2011)
- Develop and implement a Conduct of Engineering procedure to clearly state expectations for engineering products and guide engineers in their work with the various tasks and activities associated with engineering decisions (Condition Report 64146-01-08; completion planned November 2013)
- Communicate key elements of established station procedures regarding usage standards, specifically the need to stop when unsure and referencing the accountability and culpability models (Condition Report 65524-02-06; completed May 2013)
- Develop and implement a Change Management Plan to implement the READE decision making model (Recognize, Express, Appraise, Decide, and Evaluate) at Wolf Creek Generating Station (Condition Report 64785-02-01; completion planned September 2013)
- Develop and deliver training to groups identified in the training needs analysis for the READE decision making model before the start of the next planned outage (Condition Report 64785-02-03; completion planned January 2014)

Based on a sampling review, the inspectors concluded that the corrective actions were appropriate to address the identified causes associated with this SCCI.

### H.1.b - Corrective Action Effectiveness Measures

Wolf Creek's effectiveness review associated with the root cause evaluation documented in CR 23032 concluded that there was improvement in the decision making area as demonstrated by:

- Improved performance as reflected in site wide performance metrics
- Improved performance as reflected in challenge review board data indicating an average grade of >90%
- No apparent cause evaluations or root cause evaluations that had linkage to H.1.b aspects

The final effectiveness follow-up was scheduled to be completed in early 2014. The inspectors noted that the majority of the proposed corrective actions had only been relatively recently implemented, and thus had yet to yield a substantial history of measurable results. The inspectors concluded that the licensee had developed reasonable effectiveness measures to eventually confirm sustained improvement in making conservative assumptions and decision making.

#### H.1.b - Results

The inspectors sampled input data and observed that Wolf Creek had self-critical internal performance measures because those measurement methods and inputs were found to reflect NRC identified and licensee-identified issues.

The inspectors noted that, over the last 15 months, the licensee has demonstrated improved conservative decision making. Inspectors have noted a deliberate effort to identify assumptions during the decision making process and efforts to confirm or eliminate those assumptions. This included an increase in the use of vendor representatives, independent experts, and labs to assess failed parts or samples and help identify appropriate corrective action. The licensee has also demonstrated an improved record of undertaking substantial repairs for emergent equipment issues, rather than operating with a degraded condition until the next outage. Examples included:

- Following the January 13, 2012, event, the licensee evaluated each of the equipment performance problems and completed overhauls or major work to improve the reliability of those systems.
- In response to the declining trend in emergency diesel generator (EDG) reliability that led to the White MSPI – EAC performance indicator, the licensee undertook a comprehensive evaluation of EDG maintenance and made improvements and modifications to both improve reliability and reduce the risk importance of EDGs. The latter included installation of three non-safety diesel generators to add a diverse power source.
- When a broken cylinder head bolt was identified on an EDG, the licensee sent the bolt to a lab for analysis and obtained the assistance of an independent expert and the vendor. The vendor provided an analysis that indicated that the EDG would be operable with one broken bolt, but the licensee conservatively replaced the broken bolt and both adjacent bolts, then promptly performed non-destructive examinations of the head bolts on all EDGs.
- When elevated vibrations were observed on the turbine-driven auxiliary feedwater pump, the licensee promptly performed maintenance and conservatively replaced the affected bearing.
- On two occasions, the licensee initiated plant shutdowns due to degraded performance of the Class 1E chillers. The licensee's evaluations of the condition in each case demonstrated conservative decision making with respect to determinations of the equipment's ability to perform for its full mission time that did not rely on unverified assumptions.

- The licensee conservatively took the unit off line to promptly repair a stator cooling water leak at a weld, in order to avoid a challenging to safety if the leak were to degrade suddenly. This decision was made in part because the licensee could not verify the extent of the weld flaw due to the geometry.

The inspectors noted that recent initiatives to improve plant safety margin, such as replacement of reactor coolant pump seal packages, and proposed addition of station blackout diesel generators as well as adding a fourth auxiliary feedwater pump, demonstrated an increase in conservative philosophy.

The licensee's metrics established for monitoring performance trends show recent positive improvement. The inspectors concluded that the identified corrective actions, when fully implemented, should be adequate to appropriately address the identified problems in conservative assumptions and decision making. The inspectors also noted that the number of NRC findings caused by non-conservative decision making has significantly improved for the most recent 12 month period. While the licensee has scheduled further corrective actions to improve the station's culture for making decisions at all levels, station management has clearly had a positive impact on decision making in high-visibility examples.

#### H.2.c - Problem Identification

Wolf Creek has had an SCCI in H.2.c, complete and accurate documentation, procedures and work packages, substantive crosscutting issue for a total of 2 ½ years. Wolf Creek addressed the H.2.c substantive crosscutting issue in two main condition reports. Condition Report 65224 included a common cause evaluation performed as a result of numerous previous condition reports to ensure the previously identified incorrect behaviors and products are identified and resolved. Condition Report 59217 involved a collective significance evaluation to address the inability to sustain improved performance following the 2011 IP 95002 NRC inspection. The inspectors concluded that the licensee appropriately entered this issue into the CAP.

### H.2.c - Evaluation of Root Causes

The licensee's evaluations identified that the common and contributing causes involved operations, engineering and maintenance department procedures that lacked clarity and accuracy, and that management had established a culture that promoted harmony rather than performance improvement, accountability, and adherence to standards. Additionally, the licensee identified that personnel were willing to work around procedure adequacy issues and perform the task as they assumed it should be done, rather than stopping to get the procedure fixed. The Condition Report 59217 evaluation identified similar common causes of leadership not aligning station behaviors. The inspectors determined that the licensee's evaluations appropriately identified the causes associated with this SCCI.

### H.2.c - Corrective Action

The inspectors reviewed the key corrective actions in this area. The licensee implemented a Procedure Upgrade Project, in which a review of all the maintenance procedures currently in use (approximately 1,550) is planned, including revisions if necessary. This plan included prioritization of the procedures into six groups. The plan will work from the highest priority to the lowest with a expected completion in 2016. At the time of this inspection, the licensee had approximately 1,062 maintenance procedures remaining to review.

Additionally, the licensee implemented an in-line review process for all work orders. This review evaluates all work orders for adequacy once they have been placed in the "planning complete" status prior to the applicable work group performing in-plant walkdowns of the work orders. As discussed, the licensee was also addressing PM instructions through the PMO project. The licensee also created a process for workers to provide feedback for procedure improvement.

The licensee also implemented an Operations Procedure Optimization Project to address concerns within the operations procedures. This project is focused on human factoring of the procedures, specifically related to ambiguity and wordiness of procedure steps. This effort was primarily focused on general operating procedures because their evaluation identified that most operator procedure issues involved these complex and infrequently used procedures. The team noted that the licensee had recently upgraded their emergency operating procedures and related support procedures. An evaluation showed that other procedures were written to industry standards. The licensee also planned to upgrade their system operating procedures and surveillance procedures by 2016.

The inspectors assessed workers' willingness to stop when they identify procedure problems through interviews and focus group discussions. The inspectors determined that the licensee has successfully ingrained in workers the expectation that they should not accept poorly written procedures, and to stop and get the procedure fixed. Additionally, the inspectors observed that station management is more engaged with aligning the station to be more focused on accountability and procedure adherence, and not accepting sub-standard performances.

### H.2.c - Corrective Action Effectiveness Measures

The licensee developed internal performance indicators for evaluation quality, including the results from the operations, engineering, and maintenance procedure quality feedback processes. These metrics were noted to have a declining trend, but this was indicative of station personnel being less tolerant of procedure issues, and more sensitive to the identification of potential procedure problems. This trend is expected during the onset of the change in process and will provide insight into the effectiveness of the corrective actions. Additionally, the station will rely on feedback from challenge review boards such as the Nuclear Safety Review Board (NSRB), Management Review Meeting (MRM) and the Plant Safety Review Committee (PSRC).

### H.2.c - Results

The inspectors concluded that the actions identified by the licensee have the potential to be effective if completed as planned. The corrective action to review and upgrade procedures is scheduled to be completed through 2016. The inspectors expressed concern that this might not be appropriately prioritized or timely. However, the inspectors noted that the licensee had clearly strengthened the first line of defense, namely getting workers to identify unclear procedures and stop work in order to get the document corrected. This action has been effective in reducing the number of NRC findings involving inadequate procedures.

In response, the license submitted a letter dated June 27, 2013, committing to completing the reviews of the highest priority procedures below by the end of the spring 2014 outage:

- General operating procedures that direct operation from full power to cold shutdown, and cold shutdown back to full power. These procedures were involved in the majority of NRC findings involving inadequate operations procedures.
- Forty percent (107 of 267) of the technical specification surveillance procedures performed by maintenance personnel will be reviewed and prioritized on the basis of importance and frequency so that the most commonly performed procedures will be reviewed first.

The inspectors concluded that the identified corrective actions, when fully implemented, should be adequate to appropriately address the identified problems in the area of complete and accurate documentation. While a substantial portion of the reviews to ensure that procedures are up to industry standards have not been completed, the inspectors noted that the number of NRC findings caused by inadequate procedures and documentation has significantly improved for the most recent 12 months. This was likely caused by changes in the culture that had previously tolerated unclear procedures.



.2 Independent Safety Culture Assessment Follow-up

a. Inspection Scope

Due to the potential causal contributions of safety culture issues to the Yellow finding, a limited scope independent safety culture assessment follow-up inspection using the guidance in IP 40100, "Independent Safety Culture Assessment Follow-up," was included in this supplemental inspection. The purpose of the assessment was to follow-up on the results of independent safety culture assessments that had been performed by the licensee. The inspection team assessed the licensee's response to the results of its independent safety culture assessments, including whether improvement has been demonstrated in areas of concern. The inspectors also independently assessed the state of safety culture at the station, including its safety-conscious work environment (SCWE) through a series of focus group interviews conducted during the inspection.

b. Findings and Assessment

No findings were identified.

To assess Wolf Creek's safety culture, the team conducted five focus groups, interviewing a total of 46 licensee personnel at the individual contributor level. These personnel had been at Wolf Creek for as long as 35 years and as short as six months (mean tenure was 17.5 years; median 20.5 years). The team also met with several managers to discuss the status of the station's safety culture improvement efforts.

The inspectors determined that the licensee's nuclear safety culture was adequate to support nuclear safety, and was improving. However, the team noted a number of safety culture challenges within a few work groups, primarily in the communication of supervisor expectations and in the ability and willingness of some personnel to document potential issues in the CAP. This is supported by the following examples:

- During a CARB meeting observed by the inspection team, the CARB observed that an individual had failed to initiate CRs for several conditions identified during an evaluation.
- A small minority of individuals expressed hesitation with using the CAP. In a survey conducted by the licensee the week of April 2, 2013, the vast majority (96%) of respondents indicated that their supervisors encourage them to write CRs for adverse conditions. However, a number of write-in comments indicated that some individuals may feel differently. The licensee administered the survey and addressed these comments under CR 66222. In response to the survey, actions were assigned to several managers to reinforce management's expectation that CRs be initiated for all adverse conditions. On May 16 and 22, 2013, the licensee's Nuclear Safety Culture Monitoring Panel reviewed the results of these discussions. Based on the panel's review, the licensee's senior leadership team initiated additional follow-up actions on May 31, 2013, under CR 69884.

- Several individuals (both survey respondents and focus group interviewees) noted that some supervisors expect that they be consulted before individuals initiate CRs. It was not clear whether the intent of this expectation is to ensure clarity or to avoid issues being placed into the CAP. However, it is possible that this could result in some issues not being documented in the CAP. Further, on April 2, 2013, in a licensee safety culture survey, 17.6% of respondents agreed with the statement “I work with my supervisor to fix problems without having to document it in the corrective action program.”
- The difficulty of responding to CRs, mostly because of the unwieldiness of the software, intimidates many individuals and likely prevents some CRs from being initiated when it would be appropriate.

The inspectors noted that the licensee was taking actions to address individuals’ hesitancy to initiate CRs, as documented in CRs 66222 and 69884. Licensee management had recognized a weakness in CR initiation and was taking actions to attempt to remedy the problem. However, not all first-line supervisors appear to have accepted the philosophy; this appears to be largely due to high workload and limited resources, though part of the problem appears to be the licensee’s CAP software.

Several individuals expressed frustration with both the quantity and quality of procedure changes implemented in response to station events:

- Individuals who will implement the procedures are not always consulted in their development. This has led to some potential improvements being overlooked.
- The large number of procedures results in unwieldy processes. Several individuals noted that they often have to have as many as five procedures open at once while accomplishing work tasks on their job sites.

To address the overall station safety culture, licensee management implemented an “accountability model.” This model includes expectations that leaders and individual contributors work together to establish and meet expectations. The licensee noted that when this model was initially implemented in August 2011, it was not universally accepted. The inspectors determined that station management has since reestablished the expectation that the model be used. While most workgroups at the station use the model, the team identified two groups that have not fully implemented it:

- The Quality group does not effectively implement the accountability model. Individuals interviewed by the team noted that at least one supervisor in QA specifically declined to explicitly define expectations for the workgroup.
- The Clearance Order group has also not fully implemented the accountability model. Licensee personnel noted that this may be due to a large number of long-term contractors in the group.

Additionally, even in the groups that fully use the model, the implementation of the model is not always consistent. Several focus group interviewees noted that though the model includes involving employees in setting expectations, some supervisors simply dictate these expectations. The interviewees noted that this made the model less effective. This lack of involvement of employees in setting expectations and the previously discussed lack of involvement of individual contributors in drafting or changing procedures both indicate a potential challenge in communication at non-management levels of the organization.

Following the licensee's 2012 safety culture survey, licensee management identified two work groups as needing to improve their safety culture due to responses on the 2012 safety culture assessment. The inspectors selected these groups for two of the focus group sessions. The focus group discussions indicated significant improvement in one of the groups, primarily due to the manager of that organization using an inclusive method to identify the issues and identify ways to improve. However, improvement was not apparent in the Quality group. The Quality management team apparently did not conduct an evaluation of the causes, or involve workers in assessing challenges and corrective action. The inspectors noted that the licensee created a program to identify and improve safety culture, but failed to provide resources or tools to assess the causes or identify improvement items. Additional actions will be needed to improve the safety culture challenges in the Quality group.

Additionally, the inspectors determined that the licensee has challenges in the safety-conscious work environment (SCWE) in its Quality organization. The inspectors identified that individuals in this group do not feel free to raise some types of concerns in condition reports or to discuss some types of issues with their management. Individuals in the QA organization also stated that they feel that they have been discouraged from initiating CRs. This was also indicated by the licensee's survey results and was corroborated by focus group interviews conducted by the inspection team. However, despite these challenges, individuals in the Quality organization indicated no hesitation to raise nuclear safety concerns and to enter such concerns into CAP.

The team also identified an issue with the licensee's training program. During two focus groups, interviewees identified that there were problems with training across the organization. The identified challenges mostly fell into two categories: instructor quality in some training groups and implementation of the on-the-job training/task performance evaluation (OJT/TPE) program. Interviewees also noted specific problems with some of the licensee's initial training, particularly for outage contractors, in that the training is not designed for workers who are new or unfamiliar with nuclear plants, but is still given to individuals who are new to the nuclear industry.

Overall, the inspectors concluded that the licensee was aware of its safety culture problems, beyond just those indicated by its substantive cross-cutting issues. The licensee was taking significant actions to remedy the problems. These actions included implementing periodic training for all employees, establishing a Nuclear Safety Culture Monitoring Team, and lowering thresholds for identification of safety culture precursors. However, based on its focus group interviews and recent survey results, the team concluded that these process improvements have not been in place long enough to be fully effective, and that additional action is needed in the QA Group. Despite these specific challenges, the inspectors concluded that the licensee was maintaining a SCWE that was adequate to support nuclear safety.

4OA6 Meetings

Exit Meeting Summary

On June 7, 2013, the inspectors presented the inspection results to Mr. M. Sunseri and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors identified that proprietary information was reviewed but would not be retained following report issuance or included in the inspection report.

**SUPPLEMENTAL INFORMATION  
KEY POINTS OF CONTACT**

Licensee Personnel

T. Baban, Manager Systems Engineering  
P. Bedgood, Manager, Radiation Protection  
R. Bowie, Senior Project Manager, Major Modifications  
J. Broschak, Vice President, Engineering  
A. Camp, Plant Manager  
R. Clemens, Vice President, Strategic Projects  
S. Henry, Manager Operations  
W. Muilenburg, Supervisor Licensing  
G. Pendergrass, Manager Station Recovery  
L. Ratzlaff, Manager Maintenance  
R. Rumas, Manager Quality Assurance  
R. Smith, Site Vice President  
M. Sunseri, President and CEO  
M. Westman, Manager Regulatory Affairs  
J. Yunk, Manager Corrective Actions

NRC Personnel

C. Peabody, Senior Resident Inspector

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

05000482/2012009-01    NOV    Failure to Provide Adequate Oversight of Contractors During Maintenance on the Startup Transformer (Section 4OA4)

### Discussed

05000482/2012007-03    NOV    Failure to Take Timely Corrective Action to Preclude Repetition (Section 4OA4)

## LIST OF DOCUMENTS REVIEWED

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
AP 15C-001	Procedure Writers Guide	26
AP 15C-002	Procedure Use and Adherence	
AP 22C-004	Operability Determination and Functionality Assessment	27
AP 27-007	Nonconforming and Degraded Conditions	9
AI 28A-018	Corrective Action Review Board	0
AI 22C-010	Operation Work Control	16
AI 22C-012	Quality Review Team (QRT) for Maintenance Work Planning	3
AP 09F-001	Business Planning	Draft
GEN 00-003	Hot Standby to Minimum Load	91
AI 28A-018	Corrective Action Review Board	0
AI 36-001	Nuclear Safety Culture Monitoring	1 (with OTSC 13-0022)
AP 36-001	Nuclear Safety Culture	3
AP 20B-001	Plant Safety Review Committee	12
AI 13E-015	Wolf Creek Leadership and Accountability Model	5A
AI 13E-015	Wolf Creek Leadership and Accountability Model	0
AI 34-010	Human Performance Tools	0
AP 28A-100	Condition Reports	20A
AI 28A-100	Cause Analysis	4
AI 28A-010	Screening Condition Reports	15

AI 28A-017	Effectiveness Follow-up	3
APF 24-002-09	WCNOC Service Requisition Check List	16
AP 24-002	Requisition and Procurement Process	26
AP 20A-008	QA Surveillance and Station Monitoring Program	13
AI 24A-009	Non-Stock Requisition Processing for Service Labor Items	16
AP 05-013	Review of Vendor Technical Documents	8

CONDITION REPORTS

23032	23119	24445	32092	34886
55574	59217	59491	60371	60460
60929	61559	64146	64785	65524
66222	68760	69139	34281	54136
50009	47670	47653	49386	37200
22444	49616	33692	47937	56134
68875	54083	54084	54085	54086
66459	68680	66719	67789	68165
60767	25062	33909	34465	46105
64183	64992	66350	67272	68137
67318	68345	15409	69250	69251
62999	63128	34455	55994	69777
53445	54994	59762	59760	59761
25662	36789	38165	68393	69884
36743	38520	42367	65249	68482
25887	28474	31111	31455	33102
33869	38517	34609	34896	36724
42357	42362	42363	42364	42365
42366	48636	42368	42369	51952
52419	52694	53443	23852	63969
65178	26805	66982	68108	68111
68355	68479	25896	68685	68487
68489	68751	69067	25817	19245
34280	33435	33750	33395	39844
68801	32705	68115	43710	41915

34279	67873	26608	27877	70131*
70171*	70064*	70132*	70133*	70110*
70123*	70122*	70121*	70120*	70125*
70106*	70093*	70088*	70087*	70047*
70028*	70096*	70088*	70087*	70004*
70072*	69956*	69955*	70073*	70063*
70016*	70060*	70061*	69983*	69982*
69967*	69954*	69945*	70100*	70004*
69982*	70078*	70130*		

\*Condition Reports generated during the inspection



DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
E-13PA12	Startup Source 13.8kV Bus PA01 Feeder Brkr 252PA0110	5
E-13PA12	Startup Source 13.8kV Bus PA01 Feeder Brkr 252PA0110	5
M-13EF01	Piping Isometric Essential Service Water System Control Bldg. "A" & "B" Train	26
M-13EF02	Piping Isometric Essential Service Water System Aux. Bldg. "A" & "B" Train	10
M-13EF03	Piping Isometric Essential Service Water System Aux. Bldg. "A" Train	21
M-13EF04	Piping Isometric Essential Service Water System Aux. Bldg. "B" Train	13
M-13EF05	Piping Isometric Essential Service Water System Aux. Bldg. "B" Train Return	13
M-13EF06	Piping Isometric Essential Service Water System Aux. Bldg. "A" & "B" Train Supply & Return	16
M-13EF07	Piping Isometric Essential Service Wtr. Sys. Control Bldg. D.G. Cooler (A&B) Train Supply & Rtn.	3
M-13EF14	Piping Iso./Essential Service Wtr. Sys. Class 1E Switchgear A/C Condenser Control Bldg. "A" Train	6
M-13EF15	Piping Isometric Essential Service Water System Class 1E Switchgear A/C Condenser Control Building "B" Train	5
M-13GN01	Piping Isometric Containment cooling System Reactor Building Train "A"	4
M-13GN02	Piping Isometric Containment cooling System Reactor Building Train "B"	5
M-KC0111	ESWS Pumphouse Piping Plan	25

LERs

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
2013-003-00	Movement of Irradiated Fuel Progressed After Non-Conservative Decision Making Resulted in Removal of One Source Range Monitor from Service	April 15, 2013

WORK ORDERS

12-351611-014	12-351847-000	12-351850-000	12-351851-000	12-351852-000
11-342808-006	11-342821-014	11-342432-026	11-342-808-002	10-333110-026
10-333111-145	12-361103-198	12-361103-199		

PURCHASE ORDERS

765347	765193	742810	750883	755955
757508	764579			

SURVEILLANCES

QS 2012-0313	QS 2012-0242	QS 2012-0422	QS 2013-0512
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MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Quality Division Fundamental Behaviors	June 18, 2012
	Engineering Department Fundamental Behaviors	June 18, 2012
	Operations Division Fundamental Behaviors	June 4, 2012
	Maintenance Division Fundamental Behaviors	April 10, 2012
	Health Physics Division Fundamental Behaviors	May 18, 2012
	Wolf Creek Engineering Technical Rigor Expectations	May 2013
TIN# HU1445501	HU Pre-Outage Dynamic Learning Activity – The Film Festival	
	Prompt Operability Determination Challenge Checklist	
	Maintenance Procedure Improvement Project - #500408	
	List and Status of Priority One Maintenance Procedures	June 6, 2013
	Recovery team H2C Closure Package Status	May 31, 2013
	Summary of Open PRCs by Priority	June 6, 2013
	Closure Review Board Package for 25062-02-01 Quality Review Team Procedure	May 15, 2013

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Closure Review Board Package for 25062-02-02 Quality Review Team Procedure	May 15, 2013
	Condition Reports for Daily SRT Meeting	June 5, 2013
	Grading Criteria for CR Immediate Operability Determination (IOD) and Functionality Assessment (FA) Performance Indicator	
	P.1(c) and P.1(d) SCCI Performance Monitoring Metrics	April 2013
AIF 28A-018-01	CARB Grading Standard for RCA	0
AIF 28A-018-02	CARB Grading Standard for ACE	0
	Corrective Action Review Board Agenda	June 5, 2013
	Nuclear Safety Culture Monitoring Senior Leadership Team Minutes	May 16, 2013
	Nuclear Safety Culture Monitoring Senior Leadership Team Minutes	May 22, 2013
	Nuclear Safety Culture Monitoring Senior Leadership Team Minutes	May 31, 2013
	P.1(c) and P.1(d) SCCI Performance Monitoring Metrics	March 2013
	P.1(c) and P.1(d) SCCI Performance Monitoring Metrics	April 2013
	Training Materials: Wolf Creek Generating Station Cause Evaluation Techniques	
	Training Materials: Wolf Creek Generating Station Corrective Action Review Board	
	Training Materials: Wolf Creek Generating Station Human Performance	
	Training Materials: Wolf Creek Generating Station Interviewing	
	Training Materials: Wolf Creek Generating Station Introduction to Cause Evaluations	
AIF 28A-018-01	CARB Grading Standard for RCA	0
AIF 28A-018-02	CARB Grading Standard for ACE	0
GT1245001	Lesson Plan: Site Access Training Site Specific	26
TG1645500	Lesson Plan: Safety Culture – What’s at Stake?	0

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Plant Health Committee Meeting Agenda	June 3, 2012
	2012 System Health Report – Component Cooling Water	May 22, 2013
	2012 System Health Report – Control Building HVAC	May 22, 2013
	2012 System Health Report – Emergency Diesel Generators	May 22, 2013
	2012 System Health Report – Low Voltage Non-Class 1E	May 22, 2013
	2012 System Health Report – Essential Service Water	May 22, 2013
	Closure Review Board for 34886-02-02, 09, 10 Leadership Model	May 15, 2013
	Closure Review Board for 34886-02-02, 13 Fundamental Behaviors	May 15, 2013
	PMO Status Report January 2013	January 2013
	PMO Status Report May 2013	May 2013
	PMO Project Report	4, 7
	Single Point Vulnerability (SPV) Review Phase V Report	June 2012
	PMO Phase 1 Assets List	
QH 1921	Quick Hit Detail Report	September 30, 2010
QH 1942	Quick Hit Detail Report	October 7, 2010
QH 2011-0021	Quick Hit Detail Report	October 6, 2011
QH 2035	Quick Hit Detail Report	April 5, 2011
CSM 3386	Computer Software Management Freeform	May 16, 2012
	PMC Backlog	April 2013
P-WCNOC-000400	PMO-Current Transformer Templates	
P-WCNOC-000404	PMO-Panel Templates	
P-WCNOC-000401	PMO Current Transformer Templates	

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	CARB Meeting Minutes	May 8, 2013
	CARB Meeting Minutes	May 15, 2013
	CARB Meeting Minutes	May 22, 2013
	CARB Meeting Minutes	May 29, 2013
	Plant Health Committee Meeting Agenda	June 3, 2013
	Current WCNOC Maintenance Rule (a)(1) Issues	May 22, 2013
IIT 10-01	Investigation into the material Condition of ESW Piping and Events from CR 00026466 and CR 00028474	
	Corrective Action Backlog Reduction Initiative	May 6, 2013
	Essential Service Water Presentation	June 3, 2013
	P.1(c) and P.1(d) SCCI Performance Monitoring Metrics	April 2013
ES1337401	Lesson Plan: Troubleshooting DLA	000
CN-RAM-13-010	Wolf Creek PSA Revision 6 Model-of-Record	0