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

November 10, 2010

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

SUBJECT: WOLF CREEK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000482/2010004

Dear Mr. Sunseri:

On September 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Wolf Creek Generating Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on November 10, 2010, with Mr. S. Hedges, Site Vice President, and other members of your staff.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC identified finding and one self-revealing finding of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Wolf Creek Generating Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at the Wolf Creek Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS).

ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

***/RA/***

Don Allen, Chief
Project Branch B
Division of Reactor Projects

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

Enclosure:

NRC Inspection Report 05000482/2010004
w/Attachment: Supplemental Information

cc w/Enclosure:

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|---|---|---|
| ADAMS: □ No ☑ Yes | ☑ SUNSI Review Complete | Reviewer Initials:DBA |
| | ☑ Publicly Available | ☑ Non-Sensitive |
| | □ Non-publicly Available | □ Sensitive |

| SRI/DRP/B | RI/DRP/B | C:DRS/PSB1 | C:DRS/PSB2 | C:DRS/EB1 |
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| CLong:sa | CPeabody | MShannon | GWerner | TFarnholtz |
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

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|---|---|
| Docket: | 05000482 |
| License: | NPF-42 |
| Report: | 05000482/2010004 |
| Licensee: | Wolf Creek Nuclear Operating Corporation |
| Facility: | Wolf Creek Generating Station |
| Location: | 1550 Oxen Lane NE<br>Burlington, Kansas |
| Dates: | July 1 through September 30, 2010 |
| Inspectors: | C. Long, Senior Resident Inspector<br>C. Peabody, Resident Inspector<br>T. Buchanan, Reactor Inspector<br>G. Guerra, CHP, Emergency Preparedness Inspector |
| Approved By: | D. Allen, Chief, Project Branch B<br>Division of Reactor Projects |

## SUMMARY OF FINDINGS

IR 05000482/2010004; 07/01– 09/30/2010; Wolf Creek Generating Plant, Integrated Resident and Regional Report, Equipment Alignment, Maintenance Risk Assessments and Emergent Work Control.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by a regional based inspector. Two Green noncited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross-Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

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

  The inspectors determined that the failure to provide a procedure that established the conditions necessary to open a main steam isolation valve without causing an excessive steam generator swell was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the Initiating Events Cornerstone attribute of procedure adequacy and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operation. Using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors concluded the finding screened to Green because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. No crosscutting aspect was identified because there was no aspect that significantly contributed to the event (Section 1R04).

Cornerstone: Mitigating Systems

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

  The failure to identify and correct the condition adverse to quality of ensuring wiring insulation meets its acceptance criteria is a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The finding is determined to be of very low safety significance because it did not represent an actual loss of safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event initiators. The finding has a crosscutting aspect in the human performance area associated with the resources component. Specifically, the August 6 troubleshooting and repair work orders did not include instructions to inspect all potentially affected wiring with a specific method to assess insulation loss in order to repair all the damaged wires [H.2(c)] (Section 1R13).

## B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and condition report numbers are listed in Section 4OA7.

## REPORT DETAILS

### Summary of Plant Status

The plant started the inspection period at 100 percent rated thermal power. On July 17, 2010, Wolf Creek decreased power to 97 percent to secure heater drain pump A. Wolf Creek returned to full power the following day. On August 23, 2010, Wolf Creek reduced power to 96 percent power per Technical Specification 3.0.3 due to both emergency diesel generators being declared inoperable. The plant returned to full power later that day. Wolf Creek remained at 100 percent for the remainder of the inspection period.

### 1. REACTOR SAFETY

**Cornerstones: Initiating Events, Mitigating Systems and Barrier Integrity**

### 1R04 Equipment Alignments (71111.04)

Partial Walkdowns

a. Inspection Scope

The inspectors performed partial equipment walkdowns of the following risk-significant systems:

- March 6, 2010, main steam system due to feedwater isolation signal
- August 2, 2010, vital DC bus and battery train B
- August 23, 2010, emergency diesel generator B

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Safety Analysis Report (USAR), technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

Introduction. A Green self-revealing noncited violation of Technical Specification 5.4.1.a, Procedures, was identified for the failure to provide an adequate procedure to establish appropriate conditions to open a main steam isolation valve which resulted in an excessive steam generator level swell and feedwater isolation.

Description. On March 3, 2010, Wolf Creek performed a plant cooldown to replace a nuclear instrument. Wolf Creek entered Procedure GEN 00-006, "Hot Standby to Cold Shutdown," and cooled the reactor coolant system to 275 degrees F, or Mode 4, Hot Standby. Procedure GEN 00-006, Step 6.38, directed the shutdown of feedwater preheating after the residual heat removal system is in service. Since the cooldown was stopped prior to placing the residual heat removal system in service, feedwater preheating was not stopped. A plant heatup was commenced at 8:51 p.m. on March 4 with the main steam isolation valves closed and feedwater heater controller FB-PIC-300 remaining set at 100 percent demand. At this point in a startup from Mode 5, this controller would have been set at 25 percent demand. Only reactor coolant pumps B and C were running, and atmospheric relief valve A was open. Main steam isolation valve A was opened at approximately 12:07 a.m. on March 5, 2010, and steam generator A level rapidly increased 28 percent and tripped the P-14 setpoint which caused a feedwater isolation signal. Main feedwater flow from the motor-driven feedwater pump was stopped due to the isolation signal. The steam demand was high enough to stop the heatup and commence a slight cooldown. After steam generator A and its hot leg cooled, steam generator level returned to normal. Operators closed atmospheric relief valve A about 2 hours later. The feedwater isolation signal cleared when steam generator level decreased below the P-14 setpoint and operators could then re-open the feedwater valves and re-establish feedwater to the steam generators. Wolf Creek initiated Condition Report 23938 and the inspectors reviewed the evaluation. The direct cause was too much steam demand from the secondary plant due to feedwater steam heating. Wolf Creek attributed the event to inadequate means of determining the pressure difference across the main steam isolation valves using control room pressure indicators. In Procedure SYS AB-120, "Main Steam and Steam Dump Startup and Operation," the operators are asked to determine valve differential pressure using control room indicators prior to opening the main steam isolation valves. The instruments have scales from 0 to 1300 psi or greater with 25 psi denominations. The accuracies of the instruments are 25 psi and 38 psi. Procedure SYS AB-120 had a differential pressure acceptance criterion of 25 psi. Inspectors agreed with the Wolf Creek evaluation that instrument uncertainty equal to or greater than the procedure's acceptance criteria was not reasonable.

Analysis. The inspectors determined that the failure to provide a procedure that established the conditions necessary to open a main steam isolation valve without causing an excessive steam generator swell was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the Initiating Events Cornerstone attribute of procedure quality and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors concluded the finding screened to Green because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be

available. No crosscutting aspect was identified because there was no aspect that significantly contributed to the event.

Enforcement. Technical Specification 5.4.1.a requires the implementation of written procedures described in Regulatory Guide 1.33, Revision 2, Appendix A. Section 3.i of Regulatory Guide 1.33, requires procedures for the startup, shutdown, and changing modes of operation for the main steam system. Contrary to the above, on March 5, 2010, Wolf Creek did not have a main steam system procedure appropriate to the circumstances. Specifically, Procedure SYS AB-120 contained inadequate steps to establish conditions necessary to open the main steam isolation valve without causing a steam generator swell due to excess steam demand. Because of the very low safety significance and Wolf Creek's action to place this issue in their corrective action program as Condition Report 23938, this violation is being treated as a noncited violation in accordance with Section 2.3.2 of the Enforcement Policy: NCV 05000482/2010004-01, "Failure to Establish Conditons to Open a Main Steam Isolation Valve that Resulted in a Feedwater Isolation."

## 1R05 Fire Protection (71111.05)

Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- May 12, 2010, 2000 foot elevation, emergency diesel building
- August 4, 2010, NK battery rooms
- August 4, 2010, train B vital switchgear cooler room
- August 10, 2010, auxiliary building 1988 foot elevation pipe chase

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

**1R06 Flood Protection Measures (71111.06)**

a. Inspection Scope

The inspectors reviewed the USAR, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving internal flooding; reviewed the USAR and corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and walked down the area listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers.

- April 19, 2010, essential service water manhole MHE4B

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

**1R11 Licensed Operator Requalification Program (71111.11)**

a. Inspection Scope

On September 16, 2010, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations

- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11-05.

b. Findings

No findings were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- September 1, 2010, CL-01, containment isolation
- September 2, 2010, EG-03, component cooling water

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization.

These activities constitute completion of two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

**1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)**

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- July 7, 2010, 22V dc power supply replacement for turbine controls
- August 26, 2010, vital switchgear cooler A wiring inspection
- September 9, 2010, turbine-driven auxiliary feedwater null voltage drift adjustment

The inspectors selected these activities based on potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

Introduction. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Conditions Adverse to Quality," involving Wolf Creek's failure to identify and correct degraded wiring in the Train A vital switchgear air conditioning unit.

Description. On August 5, 2010, the SGK05A unit tripped when it blew a fuse. The cause of the blown fuse was found to be a wire that shorted to its terminal box which is mounted to the compressor. SGK05A is an air conditioning unit which cools the train A vital switch gear, the train A batteries, train C batteries, and the associated DC loads. Troubleshoot Work Order 10-331495-000 stated that all wires were inspected. Repair Work Order 10-331501-00 stated to inspect for additional damage. A limited number of wires were replaced and the unit was returned to service. Control room log entries following repairs stated that all degraded wires were replaced. The inspectors reviewed the work orders, interviewed maintenance personnel, and questioned degradation of cables that were not replaced, as shown in photos of the terminal box. The photos showed visible wear on cables that were not replaced. The inspectors questioned how the 10 percent insulation losses were quantified, but were informed it was a skill-of-the-craft activity. Only a few thousandths of an inch of insulation could be lost prior to exceeding the acceptance criterion. On August 26, 2010, Wolf Creek re-inspected the wiring and found 15 wires that exceeded the 10 percent acceptance criterion for insulation loss and 1 wire that exceeded 50 percent. Wolf Creek expanded its extent of condition to include wires inside flex conduit. The conduit vibrates with the compressor and these wires were also found to be losing insulation. The wiring inspections also included the use of specific criteria from engineering for various gauge wires and the use of calipers to determine thickness. This issue is captured in Condition Reports 27564, 27209, 27218, 27231, 27734, 27671, and 27237.

Analysis. The failure to identify and correct the condition adverse to quality of ensuring wiring insulation meets its acceptance criteria is a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because it did not result in exceeding a Technical Specification allowed outage time, and did not affect external event initiators. The finding has a crosscutting aspect in the human performance area associated with the resources component. Specifically, the August 6 troubleshooting and repair work orders did not include instructions to inspect all potentially affected wiring with a specific method to assess insulation loss in order to repair all the damaged wires [H.2(c)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, from August 6 to 26, 2010, Wolf Creek did not correct a condition adverse to quality. Specifically, Wolf Creek did not take action to correct degraded wiring inside vital switchgear cooler SGK05A. This issue and the corrective actions are being tracked in Condition Reports 27564, 27209, 27218, 27231, 27734, 27671, and 27237. Because this issue

was determined to be of very low safety significance (Green) and was entered into the licensee's corrective action program, this violation is being treated as a noncited violation in accordance with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000482/2010004-02, "Failure to Correct Degraded Vital Switchgear Cooler Wiring."

## 1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- January 21, 2010, emergency diesel generator nonsafety O-rings
- July 1, 2010, residual heat removal recirculation valve closures
- July 28, 2010, auxiliary feedwater recirculation line tornado protection
- August 23, 2010, emergency diesel generator A jacket water piping seismic qualification
- August 25, 2010, refueling water storage tank recirculation line external event protection
- August 25, 2010, emergency diesel generator A and B lube oil piping seismic qualification

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and USAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05

b. Findings

No findings were identified.

## 1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following temporary/permanent modifications to verify that the safety functions of important safety systems were not degraded:

- Train A switchgear Class 1E refrigerant sensing line replacement

The inspectors reviewed the temporary modification and the associated safety evaluation screening against the system design bases documentation, including the USAR and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration was consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05

b. Findings

No findings were identified.

## 1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- July 1, 2010, emergency diesel generator A sync check relay
- July 7, 2010, motor-driven auxiliary feedwater pump A
- July 27, 2010, safety injection valve 8807A
- July 29, 2010, containment spray pump A room cooler
- August 12, 2010, emergency diesel generator B
- August 23, 2010, residual heat removal pump A after vacuum fill and vent
- August 28, 2010, emergency diesel generator A local power supply replacement
- September 4, 2010, atmospheric relief valve A after rebuild
- September 9, 2010, turbine-driven auxiliary feedwater pump after trip throttle valve limit switch adjustment

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of nine postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

**1R22 Surveillance Testing (71111.22)**

a. Inspection Scope

The inspectors reviewed the USAR, procedure requirements, and technical specifications to ensure that the two surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data

- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints.

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- August 20, 2010, motor-driven fire pump
- September 16, 2010, component cooling water pumps B and D inservice pump test

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

**1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)**

a. Inspection Scope

The inspector performed an in-office review of the Wolf Creek Emergency Plan; Document AP 06-002, “Radiological Emergency Response Plan (RERP),” Revision 10. This revision changed the backup method of notifying the emergency response organization from a manual call-out to an automated call-out using two automatic dialing systems, changed the term “thermoluminescent dosimeter” to “record dose dosimeter,” and updated figure 8, “Direct Radiation Pathway Sampling Locations.”

This revision was compared to its previous revision, to the criteria of NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” Revision 1, to NUMARC/NESP-007, “Methodology for Development of Emergency Action Levels,” Revision 2, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the

requirements of 10 CFR 50.54(q). This review was not documented in a SER and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.04-05.

Findings

No findings were identified.

**1EP6 Drill Evaluation (71114.06)**

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on July 20, 2010, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

## 4. OTHER ACTIVITIES

**4OA2 Identification and Resolution of Problems (71152)**

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, and Occupational Radiation Safety**

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: The complete and accurate identification of the problem; the timely correction, commensurate with the

safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized a corrective action item documenting actions taken to address the failure to take timely corrective action to correct Barton transmitter defects identified in noncited violation: NCV 05000482/2008006-05. This noncited violation is a result of the licensee's failure to address the apparent cause evaluation and corrective actions for the failure to follow procedure AP 28-011 as documented in noncited violation: NCV 05000482/2006004-02. Corrective actions have been taken to address both noncited violations and all affected Barton transmitters have been replaced with qualified replacements.

Separately, inspectors reviewed the licensee's station blackout frequency evaluation that was performed in response to the April 2008 and August 2009 losses of offsite power. The inspectors found the evaluation met the requirements of regulatory guide 1.155.

These activities constitute completion of two in-depth problem identification and resolution sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

## 4OA3 Event Follow-up (71153)

.1 Residual Heat Removal Train A Voiding

a. Inspection Scope

July 2 - 6, 2010, the inspectors responded to indications of voiding in the residual heat removal system. Wolf Creek received indication of voiding in residual heat removal Train A when the recirculation valve was closing during pump tests. The recirculation valve closure was not an expected response during pump runs. The inspectors reviewed isometric drawings and checked Wolf Creek's efforts to remove the voids. The inspectors reviewed calibration records for flow instruments that provide input to the recirculation valve. The inspectors observed several pump runs in which Wolf Creek was attempting to quantify a void located in the top of the residual heat removal heat exchanger U-tubes. The inspectors turned this issue over to the pre-existing Special Inspection team in accordance with Inspection Procedure 71153. The Special Inspection team will document its conclusions in NRC Inspection Report 2010-008.

These activities constitute completion of one sample in accordance with Inspection Procedure 71153-05, "Followup of Events and Notices of Enforcement Discretion."

b. Findings

No findings were identified.

.2 Technical Specification 3.0.3 Entry Due to no Operable Emergency Diesel

a. Inspection Scope

On August 23, 2010, the inspectors responded to the control room for entry into Technical Specification 3.0.3 when both emergency diesel generators were declared inoperable. Both diesels were missing a lube oil restraint bolt and justification for the seismic qualification for the lube oil subsystems did not exist. Wolf Creek exited Technical Specification 3.0.3 when engineering was able to show preliminary computer code calculations that the piping stresses were acceptable. The inspectors reviewed the 10 CFR 50.72 notification that was made to NRC headquarters. The inspectors observed reactor power ascension from the control room. The inspectors reviewed the preliminary computer calculation used to determine that the system was operable. The inspectors walked down the diesels to verify the licensee's extent of condition review. The inspectors reviewed the formal calculation under Inspection Procedure 71111.15.

These activities constitute completion of one sample in accordance with Inspection Procedure 71153-05, "Followup of Events and Notices of Enforcement Discretion."

b. Findings

No findings were identified.

.3 Residual Heat Removal Train A Voiding

a. Inspection Scope

August 21 - 23, 2010, the inspectors responded to train A of residual heat removal being declared inoperable when an error was discovered in response to a question from the Special Inspection team. The inspectors reviewed calculations for void sizing, observed vacuum fill and vent evolutions, walked down portions of the system, and observed residual heat removal pump runs used to quantify void size. The inspectors reviewed calculations to ensure that the system could be returned to an operable status on August 23, 2010. Further information that the resident inspectors gathered was turned over to the Special Inspection team which will document its conclusions in NRC Inspection Report 2010-008.

These activities constitute completion of one sample in accordance with Inspection Procedure 71153-05, "Followup of Events and Notices of Enforcement Discretion."

b. Findings

No findings were identified.

.4 (Closed) Licensee Event Report 2009-006-01: Inadequate Common Cause Failure Determination Results in Condition Prohibited by Technical Specifications

On June 30, 2009, while operating at 100 percent, Wolf Creek experienced a through wall leak on essential service water system piping just upstream of valve EF HV-038. This was discovered by shift crew personnel during normal watch rounds. The essential service water train B was declared inoperable because structural integrity was uncertain while pending full evaluation by Wolf Creek engineering staff. This resulted in the diesel generator B being declared inoperable and entering Condition B of Limiting Condition for Operation 3.8.1. One of the required actions of this condition is to determine if the inoperability is due to a common cause failure mechanism. Control room operators declared that the inoperability was not due to a common cause failure mechanism, however, no basis was provided. During follow up of the issue, the inspectors determined that corrosion in the essential service water system is in fact a common cause failure mechanism, and that the licensee's failure to perform alternative specified actions constituted a violation of technical specifications. This violation is documented in NRC Inspection Report as NCV 05000482/2009004-03.

Upon review of LER 2009-006-01, the inspectors determined that corrective actions taken in response to NCV 05000482/2009004-03 are sufficient and no further actions are needed at this time. LER 2009-006-01 is closed.

.5 (Closed) Licensee Event Report 2010-003-00: Positive Reactivity Addition in Mode 2 with One Source Range Neutron Flux Channel Inoperable

On August 19, 2009, a loss of offsite power event caused a reactor trip and turbine trip and the plant entered Mode 3. As a result, power to the containment cavity cooling fans

was lost and source range neutron flux channel SEN0031 increased unexpectedly and stabilized significantly higher than SEN0032. When cavity cooling was restored 9 hours later, the SEN0031 count rate returned to a level comparable to SEN0032. Wolf Creek noted the discrepancy but did not perform an operability evaluation before using the instrument to restart the reactor on August 22, 2009. The instrument was replaced in the Fall 2009 refueling outage. The resident inspectors determined that this was a violation of technical specifications. This violation is documented in NRC Inspection Report as NCV 05000482/2009005-09.

Upon review of LER 2010-003-00, the inspectors determined that corrective actions taken in response to NCV 05000482/2009005-09 are sufficient and no further actions are needed at this time. LER 2010-003-00 is closed.

### 4OA6 Meetings

Exit Meeting Summary

On October 4, 2010, the Senior Resident Inspector presented the inspection results to Mr. S. Henry, Acting Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 16, 2010, the inspectors conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan to Mr. R. Flannigan, Manager Regulatory Affairs, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On November 10, 2010, the Senior Resident Inspector re-exited with Mr. S. Hedges, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which met the criteria of Section 2.3.2 of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a noncited violations.

Title 10 CFR 21.3, requires, in part, that commercial grade components have their critical characteristics identified such that they will provide reasonable assurance of performing their intended safety function. On January 21 - 22, 2010, Wolf Creek identified commercial grade nonsafety class O-rings and gaskets installed in the safety-related emergency diesel generators. These components did not go through a dedication process. Wolf Creek found that a safety classification analysis from 1992 allowed the use of nonsafety O-rings and gaskets since the jacket water systems have a connected nonsafety demineralized water system to makeup the jacket water losses. This effectively deleted the safety-related procurement requirements to obtain basic components with the critical characteristics for these parts. However, the safety classification utilized the nonsafety demineralizer system to replace jacket water losses

during design basis events. Wolf Creek identified that a nonsafety O-ring could not be used to support a safety-related diesel, nor could the demineralizer system be used to support the diesel. Some parts could be subsequently dedicated because spares from the same lot number were available in the warehouse for testing of critical characteristics. However, others could not be dedicated. Subsequent Wolf Creek reviews have found several other nonsafety gaskets and O-rings in the safety-related emergency diesels. The inspectors determined this finding to be of very low safety significance because it did not result in the loss of operability of a diesel generator. This issue was entered into the licensee's correction action program as Condition Reports 23024, 22989, 23576, 23819, 23978, 23049, 22985, and 22986.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

Licensee Personnel

M. Sunseri, President and Chief Executive Officer
S. E. Hedges, Site Vice President
K. Scherich, Director Engineering
T. East, Manager, Emergency Planning
P. Bedgood, Superintendent, Chemistry/Radiation Protection
G. Pendergrass, Director, Plant Engineering
L. Ratzlaff, Supervisor, Support Engineering
G. Neises, Manager, Design Engineering
S. Koenig, Manager, Corrective Action
S. Henry, Plant Manager
B. Dale, Manager, Maintenance
D. Dees, Supervisor, Operations Support
R. Flannigan, Manager, Regulatory Affairs
D. Hooper, Supervisor, Licensing
J. Simmons, Maintenance Rule Engineer
T. Slenker, Operations Support Engineer
S. Wideman, Senior Licensing Engineer
S. Atkin, Design Engineer
L. Rockers, Licensing Engineer
B. Muilenberg, Licensing Engineer

NRC Personnel

G. Miller, Branch Chief, DRP/B
C. Long, Senior Resident Inspector
C. Peabody, Resident Inspector
G. Guerra, CHP, Emergency Preparedness Inspector

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

| | | |
|---|---|---|
| 05000482/2010004-01 | NCV | Failure to Establish Conditions to Open a Main Steam Isolation Value that Resulted in a Feedwater Isolation (Section 1R04) |
| 05000482/2010004-02 | NCV | Failure to Correct Degraded Vital Switchgear Cooler Wiring (Section 1R13) |

Closed

| | | |
|---|---|---|
| 05000482/2009-006-01 | LER | Inadequate Common Cause Failure Determination Results in Condition Prohibited by Technical Specifications (Section 4OA3) |
| 05000482/2010-003-00 | LER | Positive Reactivity Addition in Mode 2 with One Source Range Neutron Flux Channel Inoperable (Section 4OA3) |

## LIST OF DOCUMENTS REVIEWED

### Section 1R04: Equipment Alignment

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| SYS GK-200 | Inoperable Class IE A/C Unit | 20 |
| GEN 00-002 | Cold Shutdown to Hot Standby | 73 |
| GEN 00-006 | Hot Standby to Cold Shutdown | 71 |
| SYS AB-120 | Main Steam and Steam Dump Startup and Operation | 24 |
| SYS AE-200 | Feedwater Preheating During Plant Startup and Shutdown | 26 |
| AP 15C-002 | Procedure Use and Adherence | 31 |

MISCELLANEOUS

| NUMBER | TITLE | REVISION |
|---|---|---|
| 10-013-GK | Temporary Modification Order | 0 |
| E-11NK01 | Class IE 125V dc System Meter and Relay Diagram | 10 |
| E-11NK02 | Class IE 125V dc System Meter and Relay Diagram | 8 |

CONDITION REPORTS

| | | | |
|---|---|---|---|
| 00027014 | 00027105 | 00027816 | 00023938 |

**Section 1R05: Fire Protection**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| AP 10-106 | Fire Preplans | 8 |
| E-1F9905 | Fire Hazard Analysis | 0 |
| M-663-00017A | Penetration Seal data | W01 |
| AP 10-102 | Control of Combustible Materials | 14 |

**Section 1R11: Licensed Operator Requalification Program**

LESSON PLANS

| NUMBER | TITLE | REVISION |
|---|---|---|
| LR5001004 | Small Break Loss of Coolant Accident | 013 |

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| AP 22C-003 | Operational Risk Assessment Program | 14A |
| APF 22B-001-02 | Daily Shutdown Risk Assessment | 8 |
| STS AL-103 | TDAFW Pump Inservice Pump Test | 43 and 44 |
| STS AL-104 | TDAFW ESF Response Time and Flow Path Verification | 14 and 15 |
| SYS AL-124 | Venting the Turbine-Driven Auxiliary Feedwater Pump Oil System | 12 |
| | On-Line Nuclear Safety and Generation Risk Assessment | |
| SYS AL-123 | TDAFW Pump Post Maintenance Run | 16 |

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

PROCEDURES

| NUMBER | | TITLE | | REVISION |
|---|---|---|---|---|
| Condition Reports | | | | |
| 00027974 | 00027992 | 00027993 | 00027976 | 00028068 |
| 2008-000777 | | | | |
| PERFORMANCE IMPROVEMENT REQUESTS | | | | |
| 2005-2241 | 2006-0366 | | | |
| MISCELLANEOUS | | | | |
| 118240 | Engineering Disposition | | | |
| Work Orders | | | | |
| 10-329408-000 | 10-333146-002 | | | |

**Section 1R15: Operability Evaluations**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| KJ-S-017 | Piping Analysis for Jacket Water Piping for EDG – Diesel Generator Building | 0 |
| KJ-S-009 | Piping Stress Analysis for “B’ EDG Auxiliary Lube Oil Pump Keep Warn Line | 1 |
| EM-10-012 | Operability Evaluation (File No. 72.61) | 0 |
| SYS AL-120 | MotorDriven or TurbineDriven AFW Pump Operations | 39 |
| | Interim Operation with an Existing Nonconforming Condition. Potential AFW Pump Recirculation Line Vulnerability | 0 |
| GEN 00-006 | Hot Standby to Cold Shutdown | 73 |

**Section 1R15: Operability Evaluations**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| GEN 00-005 | Minimum Load to Hot Standby | 66 |
| STS EJ-100A | RHR System Inservice Pump A Test | 04A |
| OE EJ-10-009 | Operability Evaluation | 2 |

DRAWINGS

| | | |
|---|---|---|
| M-018-00110 | Electrical Schematic Engine Gauge Panel KJ121 (KJ122) | 13 |
| M-018-00249-W11-A-1 | Wiring diagram Gen. Control Panel NE107 | 0 |
| M-018-00250-W13-A-1 | Wiring Diagram Gen. Control Panel (NE107) | 0 |
| M-018-00424-W05-A-1 | One Line Diagram EDG SNUPPS | 0 |
| M-018-00079-W16-A-1 | Electrical Schematic Diesel Generator Control NE 107 (NE 106) | 0 |
| E-13NE12-009-A-1 | Schematic Diagram Diesel Generator KKJ01A Exciter/Voltage Control | 0 |

CALCULATIONS

| NUMBER | TITLE | REVISION |
|---|---|---|
| EJ-M-051 | External Pressure Capacities, Tube, Channel, and Piping Vacuum for Residual Heat Removal Heat Exchanger (EEJ01A) | 00 |

WORK ORDERS

| | | | | |
|---|---|---|---|---|
| 10-332402-001 | 10-332402-000 | 07-297263-032 | 07-297263-007 | 07-297263-013 |
| 08-311976-002 | 10-331115-000 | 10-326184-001 | 10-326184-000 | 10-326533-001 |
| 10-326533-000 | | | | |

WORK REQUESTS

10-082481 10-082482

CONDITION REPORTS

00027691 00025855 00027575 00027546 00026587

**Section 1R19: Postmaintenance Testing**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| SYS KJ-123 | Post Maintenance Run of Emergency Diesel Generator A | 42A |
| TMP 10-002 | Test of A EDG Sync Check Relay | 0A |
| STN EM-201 | Safety Injection System Valve Test | 8A |
| STS AL-101 | MDAFW Pump A Inservice Pump Test | 35 |
| MPM LT-001 | Limitorque Operator Minor Maintenance, Lubrication, and Inspection | 13 |
| AP 05G-005 | Maintenance Group Environmental Qualification Program | 2 |
| TMP 10-020 | RHR System Vacuum Fill and Vent | 0 |

**Section 1R22: Surveillance Testing**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| STS-EG-100B | Component Cooling Water Pumps B/D Inservice Pump Test | 21 |
| SYS EG-120 | Component Cooling Water System | 31 |
| STN FP-212 | Electric Motor-Driven Fire Pump 1FP01PA Monthly Operation | 12 |
| AP 26A-003 | 10 CFR 50.59 Reviews | 10A |

CONDITION REPORTS

| | | | | |
|---|---|---|---|---|
| 27802 | 27080 | 27220 | 26744 | 27242 |
| 27144 | 27196 | | | |

WORK ORDERS

04-262017-000

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| AP 06-002 | Radiological Emergency Response Plan | 10 |

**Section 1EP6: Drill Evaluation**

DOCUMENTS

| NUMBER | TITLE | DATE |
|---|---|---|
| 10-SA-02 | Drill Report | July 20, 2010 |

**Section 4OA2: Identification and Resolution of Problems**

PROCEDURES

| NUMBER | TITLE | REVISION |
|---|---|---|
| AI 16C-007 | Work Order Planning | 22 |
| OFN AF-025 | Unit Limitations | 29 |
| AP 21C-001 | WCGS Substation | 10 |

WORK ORDERS

| | | | | |
|---|---|---|---|---|
| 07-298171-007 | 07-298171-010 | 07-298171-003 | 07-298468-000 | 07-298171-009 |
| 07-298171-005 | 07-298171-004 | 07-298171-002 | 07-298171-001 | 07-298171-000 |
| 07-298171-008 | 07-298171-006 | | | |

WORK REQUESTS

| | |
|---|---|
| 00077-93 | 07-062916 |

CONDITION REPORTS

| | | | | |
|---|---|---|---|---|
| 28205 | 08864 | 00759 | 10516 | 20237 |
| 26372 | 28044 | | | |

MISCELLANEOUS DOCUMENTS

| NUMBER | TITLE | REVISION / DATE |
|---|---|---|
| CP 012457 | Part 21 Issue on Connector Assembly of Environmentally Qualified Barton Model 763 & 764 Pressure Transmitters | 0 |
| OE XX-06-003 | Operability Evaluation – Barton Transmitters | 00 |
| Regulatory Guide 1.155 | Station Blackout | August 1988 |
| NUMARC 87-00 | Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors | August 1991 |
| IIT 09-002 | Loss of Offsite Power & Plant Trip | August 1, 2009 |
| WM06-0011 | 60-Day Response to NRC Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power | February 1, 2006 |
| Generic Letter 2006-02 | Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power | February 1, 2006 |
| ET 07-0003 | Response to NRC Request for Additional Information Regarding NRC Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power | January 31, 2007 |
| | Closeout Letter for Generic Letter 2006-02, Response to NRC Request for Additional Information Regarding NRC Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power (TAC No. MD1050) | May 10, 2007 |
| 0414 | Monitoring Wolf Creek Contingency Study 345 kV Bus Voltage | March 30, 2010 |
| | GK-MW-004, Sheet 5 of 24 | April 22, 1994 |
| WCAP-12231 | Station Blackout Coping Assessment for Wolf Creek Generating Station | April 15, 1989 |
| RIS 2004-00528044 | NRC Regulatory Issue Summary 2004-05 Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power | April 15, 2004 |

**Section 4OA3: Event Follow-Up**

DRAWINGS

| NUMBER | TITLE | REVISION |
|---|---|---|
| M-12EJ01 | Piping and Instrumentation Diagram Residual Heat Removal System | 43 |
| M-01EJ01 | System Flow Diagram Residual Heat Removal | 6 |
| M-13BN01 | Piping Isometric Borated Refueling Water Storage Sys Auxiliary Building | 1M |
| M-12BN01 | Piping and Instrumentation Diagram Borated Refueling Water Storage System | 14 |
| M-13EJ01 | Piping Isometric Residual Heat Removal Train A Auxiliary Building | 15 |