



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

May 14, 2018

Mr. Adam C. Heflin, 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 05000482/2018001

Dear Mr. Heflin:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Wolf Creek Generating Station. On April 25, 2018, the NRC inspectors discussed the results of this inspection with Mr. C. Reasoner, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or significance of this non-cited violation, 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, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC resident inspector at the Wolf Creek Generating Station.

If you disagree with a cross-cutting aspect assignment 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspector at the Wolf Creek Generating Station.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Nicholas H. Taylor, Chief
Project Branch B
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000482/2018001
w/ Attachments:
1. Supplemental Information
2. Request for Information

**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 05000482

License Number: NPF-42

Report Number: 05000482/2018001

Enterprise Identifier: I-2018-001-0012

Licensee: Wolf Creek Nuclear Operating Corporation

Facility: Wolf Creek Generating Station

Location: 1550 Oxen Lane NE
Burlington, KS 66839

Inspection Dates: January 1, 2018, to March 31, 2018

Inspectors: D. Dodson, Senior Resident Inspector
F. Thomas, Resident Inspector
D. Bradley, Senior Resident Inspector, Callaway

Approved By: N. Taylor, Chief, Project Branch B, Division of Reactor Projects

SUMMARY

The Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an Integrated Inspection at Wolf Creek Generating Station in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC-identified and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Inadequate Functionality Assessment Associated with the Emergency Excess Letdown Flowpath			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000482/2018001-01 Closed	[H.14] – Human Performance, Conservative Bias	71111.15 - Operability Determinations and Functionality Assessments
<p>The inspectors identified a Green finding and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” when the licensee failed to adequately implement the operability determination and functionality assessment procedure. Specifically, the licensee failed to document a functionality assessment of sufficient scope to address the capability of a safety-related excess letdown heat exchanger to pressurizer relief tank isolation valve and the excess letdown system to perform their specified safety functions, which resulted in the licensee failing to recognize that two independent Technical Requirements Manual required boration injection subsystems were not functional.</p>			

PLANT STATUS

Wolf Creek Generating Station began the inspection period at rated thermal power. On March 30, 2018, a plant shutdown was completed to begin Refueling Outage 22.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for extreme low temperatures on January 2 and 3, 2018.

71111.04 - Equipment Alignment

Partial Walkdown (2 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) turbine-driven auxiliary feedwater train on February 6, 2018
- (2) residual heat removal pump B on March 21, 2018

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the component cooling water system on February 23, 2018.

71111.05AQ - Fire Protection Annual/Quarterly

Quarterly Inspection (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) fire area A-16, general area, elevation 2,026 feet on January 30, and March 28, 2018
- (2) fire area A-18, electrical penetration room (north), elevation 2,026 feet on January 30, 2018
- (3) fire area A-17, electrical penetration room (south), elevation 2,026 feet on March 28, 2018
- (4) fire area A-26, decontamination area for I&C shop, elevation 2,026 feet on March 28, 2018
- (5) fire area A-27, reactor trip switchgear, motor-generator sets, load centers, rod control and rod-drive power supply control cabinets 125 volt direct current panel on March 28, 2018.

71111.06 - Flood Protection Measures

Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protections in rooms 1203 and 1203A, Pipe Space B on January 9, 2018.

71111.07 - Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated containment spray train A room cooler (SGL13A) performance on January 17, 2018.

71111.11 - Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated licensed operator simulator requalification activities that included a loss of all alternating current power during shutdown scenario on February 22, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated operator performance during end of life core moderator temperature coefficient measurement activities on February 5, 2018.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness (1 Sample)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

Auxiliary building heating ventilation and air conditioning (GL) system including safety-

related pump and electrical penetration room coolers on January 29, 2018.

71111.13 - Maintenance Risk Assessments and Emergent Work Control (5 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) reactor partial trip alarm troubleshooting and main generator transformer B loss of two cooling groups on January 4, 2018
- (2) emergent maintenance on Class 1E electrical equipment air conditioning unit train A on January 24, 2018
- (3) planned maintenance on component cooling water train B on March 5, 2018
- (4) emergent maintenance associated with the failed control room envelope pressure test on March 6, 2018
- (5) emergent maintenance on Class 1E electrical equipment air conditioning unit train B on March 12, 2018.

71111.15 - Operability Determinations and Functionality Assessments (8 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) auxiliary building elevation 1988 foot south pipe chase drain functionality with three clogged floor drains on January 10, 2018
- (2) 125 volt direct current to 120 volt alternating current NN15 inverter operability after a high voltage alarm would not clear on January 18, 2018
- (3) emergency diesel generator A lubrication oil leakage on January 31, 2018
- (4) Class 1E electrical equipment air conditioning unit train B operability following a step controller failure on February 12, 2018
- (5) reactor coolant pump A standpipe not filling on the expected frequency on February 25, 2018
- (6) Technical Specification 3.7.10 mitigating actions to ensure the control room envelope occupant radiological exposures would not exceed limits and control room envelope occupants are protected from chemical and smoke hazards while the control room envelope was inoperable on March 6, 2018
- (7) excess letdown heat exchanger outlet to pressurizer relief tank isolation valve functionality after failed stroke testing on March 12, 2018
- (8) station blackout diesel generator functionality after post maintenance testing on March 20, 2018.

71111.19 - Post Maintenance Testing (4 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Class 1E electrical equipment air conditioning unit train A following planned maintenance on January 24, 2018
- (2) motor-driven auxiliary feedwater train B pump discharge to steam generators A and D auxiliary feed water flow regulating valve testing following planned maintenance on February 6, 2018
- (3) component cooling water pump A following planned maintenance on February 15, 2018
- (4) residual heat removal pump A following planned maintenance on March 21, 2018.

71111.20 - Refueling and Other Outage Activities (Partial Sample)

The inspectors evaluated Refueling Outage 22 activities from March 30 to 31, 2018. The inspectors completed inspection procedure Sections 03.01.a, 03.01.b, and 03.01.c.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (5 Samples)

- (1) STS IC-926B, Component Cooling Water System Automatic Valve Actuation Train B, Revision 6B, on January 4, 2018
- (2) STS IC-915B, Channel Operational Test Train B Component Cooling Water System Non-Nuclear Safety-Related Isolation, Revision 8A, on January 8, 2018
- (3) STS IC-926A, Component Cooling Water System Automatic Valve Actuation Train A, Revision 8A, on February 12, 2018
- (4) STS IC-217, [Reactor Coolant Pump] Loss of Voltage and Underfrequency [Trip Actuation Device Operational Testing], on March 5, 2018
- (5) STS PE-004, Auxiliary Building and Control Room Pressure Tests, Revision 16, on March 5 and March 12, 2018.

71114.06 - Drill Evaluation

Emergency Planning Drill (1 Sample)

The inspectors evaluated the emergency preparedness drill on February 27, 2018.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification (3 Samples)

The inspectors verified licensee performance indicator submittals listed below:

- (1) IE01: Unplanned Scrams per 7000 Critical Hours Sample (01/01/2017–12/31/2017)
- (2) IE03: Unplanned Power Changes per 7000 Critical Hours Sample (01/01/2017–12/31/2017)
- (3) IE04: Unplanned Scrams with Complications (USwC) Sample (01/01/2017–12/31/2017).

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (2 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) On February 8, 2018, the unit vent tornado damper failed to meet acceptance criteria for initial breakaway torque. This issue was documented in Condition Report 119330.
- (2) On May 11, 2017, Condition Report 112960 documented that pressurizer safety valve 88010A's as-found lift setting was 3.2 percent below the nominal setpoint.

INSPECTION RESULTS

Inadequate Functionality Assessment Associated with the Emergency Excess Letdown Flowpath			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000482/2018001-01 Closed	[H.14] – Human Performance, Conservative Bias	71111.15 - Operability Determinations and Functionality Assessments
<p>The inspectors identified a Green finding and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” when the licensee failed to adequately implement the operability determination and functionality assessment procedure. Specifically, the licensee failed to document a functionality assessment of sufficient scope to address the capability of a safety-related excess letdown heat exchanger to pressurizer relief tank isolation valve and the excess letdown system to perform their specified safety functions, which resulted in the licensee failing to recognize that two independent Technical Requirements Manual required boration injection subsystems were not functional.</p>			
<p><u>Description:</u> On March 12, 2018, the licensee was performing Procedure STN BB-201, “Exercise of BB HV-8157A and BB HV-8157B,” Revision 3, which tests and exercises the excess letdown heat exchanger to pressurizer relief tank isolation valves (BB HV-8157A and BB HV-8157B). The BB HV-8157B valve did not stroke fully closed as expected. Step 6.1.1 of Procedure STN BB-201 states, “If the valve cannot be fully exercised, then valve shall be declared inoperable and corrective action initiated.”</p> <p>Condition Report 120287 was documented on March 12, 2018, reporting the valve failure. The immediate functionality assessment stated, “The redundant path of excess letdown is still available. The system is functional but degraded. The system functionality is maintained by having a second redundant flow path for excess letdown.” The inspectors noted that Section 6.4.7 of Procedure AP 26C-004, “Operability Determination and Functionality Assessment,” Revision 35, states, “The scope of a functionality assessment must be sufficient to address the capability of SSCs to perform their specified functions...The following things should be considered when performing functionality assessments: codes, standards and system requirements controlling the SSC.”</p> <p>The inspectors questioned the licensee concerning the immediate functionality determination’s adequacy, and the licensee revised the functionality determination for the excess letdown heat exchanger to pressurizer relief tank isolation valve (8157B) and changed the determination to non-functional. The immediate functionality determination was updated to state:</p> <p style="padding-left: 40px;">The above screening gives an adequate justification for why the excess letdown portion of the [chemical and volume control system] remains functional but degraded. However, screening should be based on the component, not the system. Since BBHV8157B cannot be relied upon to go to the closed position using normal remote controls, the valve is considered nonfunctional. The system remains functional but degraded.</p>			

The inspectors also noted that Section 3.1.9, "Boration Injection System – Operating," of the Technical Requirements Manual, requires two boration injection subsystems to be functional in MODES 1, 2, and 3. Section 3.1.9 of the Technical Requirements Manual Bases describes what is required for a boration injection subsystem to be considered functional. Specifically, both subsystems require the safety-related excess letdown flow path. Also, two independent boration injection subsystems are required to ensure single functional capability in the event an assumed failure renders one of the boration injection subsystems nonfunctional.

Updated Safety Analysis Report Section 7.4.3.3 describes the applicable single failure analysis. It states, "The capability of the [residual heat removal system] to accommodate a single component failure and still perform a safety grade cooldown is demonstrated in the failure mode and effects analysis (FMEA) of the [residual heat removal] system for safety-related cold shutdown operations provided as Table 7.4-4." Table 7.4-4, "Residual Heat Removal – Safety Related Cold Shutdown Operations – Failure Modes and Effects Analysis (FMEA)," describes the function of the excess letdown to pressurizer relief tank isolation valves (8157A and 8157B), stating, "Provides safety grade letdown flow path." Hence, in order for the safety-related excess letdown flowpath to the pressurizer relief tank to meet its safety function, either 8157A or 8157B must be functional and capable of opening.

The inspectors again questioned the updated immediate functionality determination's adequacy. Specifically, considering that 8157A and 8157B are parallel valves, that 8157B was non-functional, and assuming a design basis single failure (for example, assume 8157A fails to open or its power supply fails), the safety-related excess letdown flowpath would be non-functional, and both Technical Requirements Manual independent boration injection subsystems would be impacted. With the excess letdown heat exchanger to pressurizer relief tank isolation valve 8157B non-functional, current language in the Technical Requirements Manual would require one boration injection subsystem to be declared non-functional.

Corrective Actions: On March 20, 2018, the licensee changed the functionality assessment—the excess letdown heat exchanger to pressurizer relief tank isolation valve (8157B) was determined to be non-functional. In response to the inspectors' questions concerning system functionality and design basis information, the licensee initiated Condition Reports 120628 and 120822. The licensee restored the B train excess letdown heat exchanger to pressurizer relief tank isolation valve to service on April 9, 2018.

Corrective Action References: Condition Reports 120287, 120628, 120822 and 122411.

Performance Assessment:

Performance Deficiency: The licensee failed to document a functionality assessment of sufficient scope to address the capability of the safety-related excess letdown heat exchanger to pressurizer relief tank isolation valve and excess letdown system to perform their specified safety functions.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the safety-related excess letdown heat exchanger to pressurizer relief tank isolation valve and excess letdown system were inappropriately determined to be functional but degraded and non-conforming, which resulted in the licensee failing to recognize that two

independent Technical Requirements Manual required boration injection subsystems were not functional.

Significance: The inspectors assessed the significance of the finding using Exhibit 2, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, and determined this finding is not a deficiency affecting the design or qualification of a mitigating SSC that maintained its operability or functionality; the finding does not represent a loss of system and/or function; the finding does not represent an actual loss of function of at least a single train for greater than its Technical Specification-allowed outage time; and the finding does not represent an actual loss of function of one or more non-Technical Specification trains of equipment designated as high safety-significant. Therefore, the inspectors determined the finding was of very low safety significance (Green).

Cross-cutting Aspect: The inspectors determined that the finding has a Human Performance cross-cutting aspect in the area of conservative bias in that individuals did not use decision making-practices that emphasize prudent choices over those that are simply allowable, and a proposed action was not determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, leaders did not take a conservative approach to decision making, particularly when information was incomplete or conditions were unusual when completing the functionality determination associated with the subject valve and system, which resulted in the valve and system being determined to be functional.

Enforcement:

Violation: Title 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be accomplished in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances. Licensee Procedure AP 26C-004, "Operability Determination and Functionality Assessment," Revision 35, an Appendix B quality related procedure, provides instructions for performing functionality assessments. Procedure AP 26C-004, Section 6.4.7, states, in part, that the scope of a functionality assessment must be sufficient to address the capability of SSCs to perform their specified functions, and codes, standards, and system requirements controlling the SSC should be considered when performing functionality assessments.

Contrary to the above, from March 12, 2018, until April 9, 2018, the scope of a functionality assessment was not sufficient to address the capability of SSCs to perform their specified functions, and codes, standards, and system requirements controlling the SSC were not considered when performing functionality assessments. Specifically, the functionality assessment associated with the excess letdown heat exchanger outlet to pressurizer relief tank isolation valve and excess letdown system was not adequate and did not adequately consider design basis information, which caused the licensee to fail to identify non-functionality of safety-related SSCs.

Disposition: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

On April 25, 2018, the inspector presented the quarterly resident inspector inspection results to Mr. C. Reasoner, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SYS EF-205	ESW/Circ Water Cold Weather Operations	40

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
96-0316	Performance Improvement Request	Initiated February 5, 1996
2006-0006	Performance Improvement Request	Initiated January 4, 2006
APF 15C-002-01	Procedure Cover Sheet – ESW/Circ Water Cold Weather Operations – SYS EF-205	Completed December 26, 2017
APF 15C-002-01	Procedure Cover Sheet – ESW/Circ Water Cold Weather Operations – SYS EF-205	Completed January 2, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Day Shift	January 19, 2018
APF 29B-003-01	Surveillance Test Routing Sheet – ESW Train B Warming Line Verification - STN EF-020B	Completed January 3, 2018
WM 96-0081	Docket No 50-482: Response to Enforcement Action EA 96-124	July 31, 1996

Section 1R04: Equipment Alignment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CKL AI-120	Auxiliary Feedwater Normal Lineup	42
CKL EG-120	Component Cooling Water System Valve, Switch and Breaker Lineup	49
CKL EJ-120	RHR System Lineup	45B

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-06EG07	Component Coolant Wtr. Sys. Aux. Bldg.	4
M-12AL01	Piping & Instrumentation Diagram Auxiliary Feedwater System	28
M-12EG01	Piping & Instrumentation Diagram Component Cooling Water System	24
M-12EG02	Piping & Instrumentation Diagram Component Cooling Water System	27
M-12EG03	Piping & Instrumentation Diagram Component Cooling Water System	19
M-12EJ01	Piping and Instrumentation Diagram Residual Heat Removal System	53
M-12FC02	Piping & Instrumentation Diagram Auxiliary Feedwater Pump Turbine	25
M-13EG07	Piping Isometric Component Cooling Water Sys. Aux. Bldg. Common Header	3
M-15EG07	Hanger Location Drawing Component Cooling Water Sys Aux. Bldg. Common Header	14

Condition Reports

119280 119401 120586

Section 1R05: Fire Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 10-106	Fire Preplans	18A
CKL ZL-001	Auxiliary Building Reading Sheets	103

Condition Reports

119366 120782 120783 120784

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-1F9905	Fire Hazard Analysis	8
XX-X-004	Calculation Cover Sheet – Combustible Fire Loading For Each Room In The Various Fire Areas at WCNO	4

Section 1R06: Flood Protection Measures

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ALR 00-094F	Misc Sumps Lev Hi	5

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12EJ01	Piping and Instrumentation Diagram Residual Heat Removal System	53
M-13LF02	Piping Isometric Sump Discharge Auxiliary Bldg.	1

Condition Reports

118576	118586	118587	118592	118593
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FL-03	Flooding of Individual Auxiliary Building Rooms	2

Section 1R07: Heat Sink Performance

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 23L-002	Heat Exchanger Program	5

Work Orders

17-428729-000	17-428729-002	17-428729-003	17-428729-005	17-428737-000
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
GL-05	Maintenance Rule Final Scope Evaluation	Printed March 27, 2018

Section 1R11: Licensed Operator Requalification Program

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 21-001	Conduct of Operations	81
STS RE-006	EOL Core MTC Measurement	20B
STS SE-001	Power Range Adjustment to Calorimetric	35

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Day Shift	February 2, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Day Shift	February 3, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	February 3, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	February 4, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	February 5, 2018
APF 29B-003-01	Surveillance Test Routing Sheet – EOL Core MTC Measurement	Completed February 5, 2018
EPF 06-007-01	Wolf Creek Generating Station Emergency Notification (Drill)	February 22, 2018
LR5004005	Loss of All AC While Shutdown – Licensed Operator Requal	12

Section 1R12: Maintenance Effectiveness

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
M-12GL01	Piping and Instrumentation Diagram Auxiliary Building HVAC	13
M-612.00062	Carrier Air Handling Units and Room Coolers	Imaged May 2017

Condition Reports

10539	114660	117759
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
	GL Room Cooler PM Schedule	
	Maintenance Rule Expert Panel Meeting Agenda	November 1, 2017
114660	Functional Failure Determination Checklist	August 17, 2017
GL-01	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-02	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-03	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-04	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-05	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-06	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-07	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-08	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018
GL-09	Maintenance Rule Final Scope Evaluation	Printed January 29, 2018

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 22C-003	On-Line Nuclear Safety and Generation Risk Assessment	22

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OFN AF-025	Unit Limitations	52
STS BB-201B	Cycle Test of PORV Block Valve BB HV-800B	4
STS IC-447	Channel Calibration Nuclear Instrumentation System Power Range Incore-Excore	46
STS MT-024B	Functional Test of 480 and 120 Volt Molded Case Circuit Breakers	17

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-622.1A-00142	SGK05A Terminal and Pressure Switch Enclosure Layout	W03

Condition Reports

118499	118938	118939	118940	118953
118958	118959	118963	118964	

Work Orders

17-422791-003	17-427320-000	18-434985-000	18-435758-000	18-435758-001
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Day Shift	January 23, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	January 23, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Day Shift	January 24, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	January 24, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	January 25, 2018
APF 21-001-02	Control Room Turnover Checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	January 26, 2018
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment: 18-0101	January 4, 2018

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment: 18-0111	March 13, 2018
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment: 2018-0110	February 15, 2018
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment: 2018-0104	January 10, 2018
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment – 2018-0122	February 14, 2018
APF 29B-003-01	Surveillance Test Routing Sheet – STS IC-447	Completed January 4, 2018
APF 29B-003-01	Surveillance Test Routing Sheet – STS PE-004 (Train B)	Completed March 7, 2018

Section 1R15: Operability Evaluations

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 16C-006	Troubleshooting	9
AI 28B-005	Evidence and Action Matrix	4
AP 12-003	Foreign Material Exclusion	16
AP 26C-004	Operability Determination and Functionality Assessment	35
OFN BB-005	RCP Malfunctions	27
STN BB-201	Exercise of BB HV-8157A and BB HV-8157B	3
STS BG-001	Boron Injection Flow Path Verification	20
STS KJ-005A	Manual/Auto Start, Sync and Loading of EDG NE01	67A
STS PE-004	Auxiliary Building and Control Room Pressure Test	16
SYS GK-122	Manual CRVIS Line-Up	24
SYS OPS-001	Weekly Equipment Rotation and Readings	80A

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-13GG01	Schematic Diagram Emergency Exhaust Fans	6
E-13GG03	Schematic Diagram Emergency Exhaust Heating Coils	1

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-13GG15	Schematic Diagram Emergency Exhaust Cross Connection Dampers	0
J-02GG14B (Q)	Fuel Building HVAC Spent Fuel Pool Normal/Emergency Exhaust Radioactivity Sample Valve	0
M-12BB02	Piping & Instrumentation Diagram Reactor Coolant System	27
M-12BB03	Piping and Instrumentation Diagram Reactor Coolant System	15
M-12BG01	Piping & Instrumentation Diagram Chemical and Volume Control System	19
M-12BL01	Piping & Instrumentation Diagram Reactor Make-Up Water System	15
M-12GG01	Piping Instrumentation Diagram Fuel Building HVAC	8
M-12GT01	Piping & Instrumentation Diagram Containment Purge Systems HVAC	24
M-12HB01	Piping and Instrumentation Diagram Liquid Radwaste System	15
M-12LF01	Piping & Instrumentation Diagram Auxiliary Building Floor and Equipment Drain System	3
M-12LF03	Piping & Instrumentation Diagram Auxiliary Building Floor and Equipment Drain System	6
M-1H1531	Heating Ventilating and Air Cond. Auxiliary Building El. 2047'-6" Area-3	5
M-1H6311	Heating Ventilating & Air Cond. Fuel Building El. 2047'-6" & 2065'-0" Area 1	2
M-622.1A-00001	SGK05A & SGK05B Air Conditioner Refrigeration Schematic	W12
M-622.1A-00002	SGK05A & SGK05B Air Conditioner Electrical Schematic	W13
M-622.1A-00003	SGK05A & SGK05B Air Conditioner Electrical Schematic	W09
M-622.1A-00257	Step Controllers	W01
M-712-00063	Reactor Coolant Pump Data Sheets	W04
M-OPIII	Embedded Drainage Systems (LF) Auxiliary Building EL. 1967'-0" & 1974'-0" Area I	5

Condition Reports

24199	90975	107789	110377	117283
118586	118587	118592	118827	118830

Condition Reports

118831	118910	118922	119069	119085
119330	119334	119442	119446	119487
119616	119822	119859	119860	119861
120053	120056	120071	120179	120181
120246	120287	120408	120409	120410
120411	120489	120535	120664	120722

Work Orders

16-411783-010	17-428518-000	18-436340-000	18-436340-002
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
107363	Functional Failure Determination Checklist	October 12, 2016
118585	Function Failure Determination Checklist	January 28, 2018
AIF 10-001-02	SCBA Inspection	Completed March 1, 2018
APF 05-002-05	Engineering Disposition – EDG Water, Lube Oil, and Fuel Oil Leakage Guidance	00
APF 05C-004-01	Basic Engineering Disposition – Review of Regulatory and License Basis Documents to evaluate the requirements of Operability Determination when Safety Related or Technical Specification Equipment is exposed to a hazard	00
APF 21-001-02	Control Room Turnover checklist – On-Coming CRS/WC SRO/RO/BOP Review – Night Shift	March 14, 2018
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment: 2018-0112	February 14, 2018
APF30B-004-01	Wolf Creek Nuclear Operating Corporation Essential Required Reading – SBO Power Equipment Center (PEC)	April 1, 2018
GG-01	Maintenance Rule Final Scope Evaluation	Printed March 22, 2018
GG-02	Maintenance Rule Final Scope Evaluation	Printed March 22, 2018

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
GG-03	Maintenance Rule Final Scope Evaluation	Printed March 22, 2018
GG-04	Maintenance Rule Final Scope Evaluation	Printed March 22, 2018

Section 1R19: Post-Maintenance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STN AL-201	Auxiliary Feedwater System Valve Test	8
STN EG-205A	Component Cooling Water System Valve Test	2
STS EG-100A	Component Cooling Water Pumps A/C [Air Conditioning] Inservice Pump Test	33A
STS EG-208A	EG TV-029 CCW [Component Cooling Water] HX [Heat Exchanger] A Temperature Control Valve Inservice Valve Test	1
STS EJ-100A	RHR [Residual Heat Removal] System Inservice Pump A Test	55
STS IC-540A	Channel Calibration Auxiliary Feedwater System Steam Generator A	9

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
E-13GK13	Schematic Diagram Class 1E Electrical Equipment A/C [Air Conditioning] Unit	6
M-12AL01	Piping & Instrumentation Diagram Auxiliary Feedwater System	23
M-12AL01	Piping & Instrumentation Diagram Auxiliary Feedwater System	28
M-622.1-00036	Electric Motor Data Sheet	March 3, 1977
M-622.1A-00002	SKG05A & SGK05B Air Conditioner Electrical Schematic	W13
M-622.1A-00142	SGK05A Terminal and Pressure Switch Enclosure Layout	W03

Condition Reports

118881	118901	118920	118953	118958
118959	118963	118964	119289	

Work Orders

15-407137-000

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	WCGS Standing Order 1 – Valve Setup and Operation	45
36121	Preventative Maintenance Work Instruction	
APF 22C-003-01	On-Line Nuclear Safety and Generation Risk Assessment	January 23, 2018
APF 29B-003-01	Surveillance Test Routing Sheet – Auxiliary Feedwater System Valve Test	Completed February 6, 2018

Section 1R20: Refueling and Other Outage Activities

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
GEN 00-004	Power Operation	89
GEN 00-005	Minimum Load To Hot Standby	90
SYS AE-320	Turbine Driven Main Feedwater Pump Shutdown	28A
SYS AF-121	Heater Drain Pump Operation	24

Section 1R22: Surveillance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 23-009	Control Room Envelope Habitability Program	2
STS EG-100B	Component Cooling Water Pumps B/D Inservice Pump Test	29
STS IC-217	RCP Loss of Voltage and Underfrequency TADOT	15C
STS IC-915B	Channel Operational Test Train B Component Cooling Water System Non-Nuclear Safety-Related Isolation	8A
STS IC-926A	Component Cooling Water System Automatic Valve Actuation Train A	8A

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STS IC-926B	Component Cooling Water System Automatic Valve Actuation Train B	6B
STS PE-004	Auxiliary Building and Control Room Pressure Test	16

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-13EG01D	Schematic Diagram Component Cooling Water Pump D	5
E-13EG08A	Schematic Diagram Component Cooling Water Supply Return From Radwaste Building	3
E-13EG11	Schematic Diagram Annunciation and Instrumentation	4
E-13EG20	Schematic Diagram Pass CCW Isolation Valves	3
M-12EG01	Piping & Instrumentation Diagram Component Cooling Water System	24
M-12EG02	Piping & Instrumentation Diagram Component Cooling Water System	27
M-12EG03	Piping & Instrumentation Diagram Component Cooling Water System	19

Condition Reports

118493	118551	118552	119412	120061
120064	120148	120151	120408	120409
120410	120411			

Work Orders

17-431050-000	17-431170-000	17-431759-000	17-432247-000
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
APF 29B-003-01	Surveillance Test Routing Sheet – STS IC-217	Completed March 5, 2018
APF 29B-003-01	Surveillance Test Routing Sheet – STS IC-926B	Completed January 4, 2018

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
APF 30B-004-01	Wolf Creek Nuclear Operating Corporation Essential Required Reading: 18-0010 Accuracy of WCRE-35	March 7, 2018

Section 1EP6: Drill Evaluation

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EPP 06-006	Protective Action Recommendations	9A

Condition Reports

119869	119870	119871	119872	119874
119877	119878	119879	119883	119885
119886	119887	119888	119889	119897
119901	119903	119904	119906	119911
119941	120017	120227	120323	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
18-SA-01	Wolf Creek Generating Station – Emergency Planning Drill	February 27, 2018
APF 06-002-01	Emergency Action Levels	17A
CR-001	Wolf Creek Generating Station Emergency Notification (Drill)	February 27, 2018
EOF-001	Wolf Creek Generating Station Emergency Notification (Drill)	February 27, 2018
EOF-002	Wolf Creek Generating Station Emergency Notification (Drill)	February 27, 2018
EOF-003	Wolf Creek Generating Station Emergency Notification (Drill)	February 27, 2018
EOF-004	Wolf Creek Generating Station Emergency Notification (Drill)	February 27, 2018
TSC-001	Wolf Creek Generating Station Emergency Notification (Drill)	February 27, 2018

Section 4OA1: Performance Indicator Verification

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7

Section 4OA2: Identification and Resolution of Problems

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STS MT-005	Pressurizer Code Safety Valve Operability	20

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-1H1531	Heating Ventilating and Air Cond. Auxiliary Building El. 2047'-6" Area-3	5

Condition Reports

90975	110377	112960	118910	119330
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Work Orders

17-428518-001

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
Email from NWS Technologies to Wolf Creek	<EXTERNAL> RE: Wolf Creek PSV failure – Questions from our NRC Resident Inspector	November 30, 2017
P.O. # 692145 SR	Valve Serial Number N60446-00-0001; Traveler 14-381	Testing Completed January 2015
PO # 779245	Valve Serial Number N60446-00-0001; Traveler 17-41	Testing Completed August 2017
NRC Letter to Otto L. Maynard	Wolf Creek Generating Station – Issuance of Amendment RE: Pressurizer Safety Valves (TAC NO. MA6969)	March 23, 2000
White Paper	Pressurizer Safety Valve NRC Follow-up Questions and Answers	

**Initial Request for Information
Integrated Inspection
Wolf Creek Nuclear Generating Station**

Inspection Report: 05000482/2018001
Inspection Dates: January 1 – March 31, 2018
Inspection Procedure: Integrated Inspection Procedures
Lead Inspector: Douglas Dodson, Senior Resident Inspector

I. Information Requested Prior to December 22, 2017

The following information should be provided in electronic format (Certrec IMS preferred), to the attention of Douglas Dodson by December 22, 2017, to facilitate the reduction in the items to be selected for a final list during inspection preparation. The inspection team will finalize its sample selections and will provide an additional information request with specific items. This information shall be made available by December 22, 2017. The specific items selected from the lists shall be available and ready for review on the day indicated in this request. *Please provide requested documentation electronically in “pdf” files, Excel, or other searchable formats, if possible. The information should contain descriptive names, and be indexed and hyperlinked to facilitate ease of use. Information in “lists” should contain enough information to be easily understood by someone who has knowledge of pressurized water reactor technology. If requested documents are large and/or only hard copy formats are available, please inform the inspector(s), and provide subject documentation.

1. Any pre-existing evaluation or list of component cooling water system components and associated calculations with low design margins.
2. A list of high risk component cooling water system maintenance rule components and functions based on engineering or expert panel judgment.
3. A list of component cooling water system related operating experience evaluations for the last 3 years.
4. A list of all component cooling water system time-critical operator actions in procedures.
5. A list of permanent and temporary modifications related to component cooling water system sorted by component.
6. A list of current component cooling water system related “operator work arounds/burdens.”
7. A list of the component cooling water system design calculations, which provide the design margin information for components.
8. List of component cooling water system root cause evaluations associated with

component failures or design issues initiated/completed in the last 5 years.

9. A list of any component cooling water system common-cause failures of components in the last 3 years.
10. An electronic copy of the component cooling water system design bases documents and any open, pending, or recently completed changes. Although not an exhaustive list, please include any open, pending, or recently completed (last 3 years) changes to temporary modifications, permanent modifications, engineering change packages, and/or procedure change packages. Specifically, please include any open, pending, or recently completed changes to emergency operating, abnormal operating, normal operating, alarm response, system alignment, surveillance, or other procedure.
11. An electronic copy of the component cooling water system System Health notebook.
12. A copy of component cooling water system related audits completed in the last 2 years.
13. A list of component cooling water system motor operated valves (MOVs) in the program, design margin and risk ranking.
14. A list of component cooling water system air operated valves (AOVs) in the valve program, design margin and risk ranking.
15. Component cooling water system structure, system, and components' maintenance rule category, scoping, unavailability data, unreliability data, functional failure evaluations, (a)(1) determinations, (a)(1) goals, and any supporting basis documentation.
16. A list of component cooling water system licensee contacts for the inspection team with pager or phone numbers.
17. An excel spreadsheet of component cooling water system related PRA human action basic events or risk ranking of operator actions from your site specific PSA sorted by RAW and FV. Provide copies of your human reliability worksheets for these items.
18. In so far as there are recent or pending changes, please provide an Excel spreadsheet of component cooling water system related equipment basic events (with definitions) including importance measures sorted by risk achievement worth (RAW) and Fussell- Vesely (FV) from your internal events probabilistic risk assessment (PRA). Include basic events with RAW value of 1.3 or greater.
19. In so far as there are recent or pending changes, please provide a list of the top 50 cut-sets from your PRA.
20. In so far as there are recent or pending changes, please provide copies of PRA "system notebooks," and the latest PRA summary document.
21. In so far as there are recent or pending changes, and if you have an external events

or fire PSA model, provide the information requested in items 17-19 for external events and fire, as it relates to the component cooling water system.

22. In so far as there are recent or pending changes, please provide a copy of the Wolf Creek Nuclear Generating Station IPEEE changes, if available electronically.

WOLF CREEK GENERATING STATION – NRC INTEGRATED INSPECTION REPORT
05000482/2018001 DATED MAY 14, 2018

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ADAMS ACCESSION NUMBER: ML18131A017

SUNSI Review: ADAMS: Non-Publicly Available Non-Sensitive Keyword:
 By: NHT/rd Yes No Publicly Available Sensitive NRC-002

OFFICE	SRI:DRP/B	RI:DRP/B	C:DRS/OB	C:DRS/PSB2	C:DRS/EB1	C:DRS/EB2
NAME	DDodson	FThomas	VGaddy	HGepford	TFarnholtz	JDrake
SIGNATURE	/RA/	/RA/	/RA/	/RA/	/RA/	/RA/
DATE	5/9/2018	5/10/18	5/3/18	5/3/18	5/3/2018	5/9/18
OFFICE	TL:DRS/IPAT	SRI/DRP/B	BC:DRP/B			
NAME	GGeorge	DBradley	NTaylor			
SIGNATURE	/RA - HFreeman for/	/RA/	/RA/			
DATE	5/10/18	5/7/18	5/14/18			

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