



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 E. LAMAR BLVD
ARLINGTON, TX 76011-4511

August 10, 2017

EA-17-064

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 05000482/2017002 AND EXERCISE OF ENFORCEMENT
DISCRETION**

Dear Mr. Heflin:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Wolf Creek Generating Station. On July 20, 2017, the NRC inspectors discussed the results of this inspection with Cleveland Reasoner, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these non-cited 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, 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.

A violation of the licensee's current site-specific licensing basis for tornado-generated missile protection was identified. Because this violation was identified during the discretion period covered by Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado Missile Protection Noncompliance," and because the licensee was implementing compensatory measures, the NRC is exercising enforcement discretion by not issuing an enforcement action for the violation and allowing continued reactor operation.

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 Title 10 of the *Code of Federal Regulations* Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA T. Pruett for/

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

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

Enclosure:

Inspection Report 05000482/2017002

w/ Attachments:

1. Supplemental Information
2. Request for Information for the Occupational Radiation Safety Inspection conducted May 8 thru 12, 2017
3. Request for Information for the Occupational Radiation Safety Inspection conducted June 12 thru 16, 2017

WOLF CREEK GENERATING STATION – NRC INTEGRATED INSPECTION
 REPORT 05000482/2017002 AND EXERCISE OF ENFORCEMENT DISCRETION – DATED
 AUGUST 10, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000482
License: NPF-42
Report: 05000482/2017002
Licensee: Wolf Creek Nuclear Operating Corporation
Facility: Wolf Creek Generating Station
Location: 1550 Oxen Lane NE
Burlington, KS 66839
Dates: April 1 through June 30, 2017
Inspectors: D. Dodson, Senior Resident Inspector
F. Thomas, Resident Inspector
N. Greene, Ph.D., Health Physicist
S. Money, Health Physicist
M. Phalen, Senior Health Physicist
Approved By: Nicholas H. Taylor
Chief, Project Branch B
Division of Reactor Projects

SUMMARY

IR 05000482/2017002; 04/01/2017 – 06/30/2017; Wolf Creek Generating Station; Flood Protection Measures, and Operability Determinations and Functionality Assessments

The inspection activities described in this report were performed between April 1 and June 30, 2017, by the resident inspectors at Wolf Creek Generating Station and inspectors from the NRC's Region IV office. Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (i.e., Green, greater than Green, White, Yellow, or Red), determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green non-cited violation of Technical Specification Limiting Condition for Operation 3.7.7 for the licensee's failure to place the unit in MODE 3 within 78 hours with the train A component cooling water system inoperable. Specifically, the essential service water emergency make-up to component cooling water train A valve was not declared inoperable when it was out of service, and as a result, train A component cooling water was out of service for longer than its Technical Specification allowed outage time. The licensee's planned actions include revising Technical Specification Bases 3.7.7 and training operators on the proposed Technical Specification Bases revisions, and the licensee issued an "Essential Reading" document for operators to review. The licensee entered the issue into the corrective action program as Condition Report 111808.

The failure to declare train A component cooling water inoperable is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors evaluated the finding using Exhibit 2, "Mitigating Systems Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined the finding was of very low safety significance (Green). The inspectors determined that the finding has a human performance cross-cutting aspect in the area of challenge the unknown because individuals did not stop when faced with uncertain conditions, and risks were not evaluated and managed before proceeding. This issue is indicative of current performance because the creation and implementation of the subject clearance order occurred in the last three years [H.11]. (Section 1R15)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green non-cited violation of 10 *Code of Federal Regulations* Part 50, Appendix B, Criterion III, Design Control, for the licensee's failure to establish adequate measures to ensure that safety-related components remained capable of performing their functions. Specifically, the licensee did not have adequate preventive

maintenance or testing tasks established to provide reasonable assurance that floor drains would not become clogged and impact the ability of train A safety-related components to perform their expected functions. As a result, a containment isolation valve was not adequately protected. The station's immediate corrective actions included entering the condition into the corrective action program, declaring the subject valves inoperable, and cleaning the debris from the clogged floor drains. The licensee created Work Order 17-429068-000 to evaluate and establish new preventive maintenance tasks for floor drains, and the licensee is continuing with, but had not yet completed, the remainder of the floor drain inspections for other safety-related areas.

The failure to establish adequate measures to ensure that floor drains in safety-related areas remained free of debris and safety-related components remained capable of performing their function is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the structure, system, and component and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using Exhibit 3, "Barrier Integrity Screening Questions," of Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," and determined this finding was of very low safety significance (Green). The inspectors determined that the finding has a problem identification and resolution cross-cutting aspect in the area of identification because individuals did not identify issues completely, accurately, and in a timely manner in accordance with the program. Condition Report 90879, documented in January 2015, was an opportunity for the licensee to identify the inadequacy of the floor drain preventive maintenance and testing strategy and reflects current performance [P.1]. (Section 1R06)

PLANT STATUS

On April 24, 2017, operators reduced power to approximately 63 percent following removal of the Wolf Creek-Benton offsite 345 kV line from service after Wolf Creek received reports of a fire impacting the Wolf Creek-Benton offsite 345 kV line. The plant was restored to approximately full power on April 25, 2017, and the plant operated at or near full power for the rest of the period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On May 18, 2017, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features, the licensee's procedures to respond to tornadoes and high winds, and the licensee's planned implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

These activities constituted one sample of readiness for impending adverse weather conditions, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walk-Down

a. Inspection Scope

The inspectors performed partial system walk-downs of the following risk-significant systems:

- April 11, 2017, centrifugal charging pump A
- June 13, 2017, safety injection pump A
- June 14, 2017, containment spray pump A
- June 27, 2017, auxiliary feedwater pump B

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the trains were correctly aligned for the existing plant configuration.

These activities constituted four partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

.2 Complete Walk-Down

a. Inspection Scope

On June 24, 2017, the inspectors completed a system walk-down inspection of the essential service water system. The inspectors reviewed the licensee's procedures and system design information to determine the correct system lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, condition reports, temporary modifications, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on five plant areas important to safety:

- May 9, 2017, fire area A-29, auxiliary feedwater pump B valve compartment, elevation 2,000 and 2,016 feet
- May 9, 2017, fire area A-30, auxiliary feedwater pump valve compartment, elevation 2,000 and 2,016 feet
- May 11, 2017, fire area RWST, refueling water storage tank valve house, elevation 1,988 and 2,000 feet
- June 16, 2017, fire area A-2, safety related pump rooms, train A, elevation 1,967 and 1,974 feet
- June 28, 2017, fire areas C-22 and C-33, upper cable spreading room and south vertical cable chase, elevation 2,073 feet 6 inches

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted five quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

.2 Annual Inspection

a. Inspection Scope

On May 12, 2017, the inspectors completed their annual evaluation of the licensee's fire brigade performance. This evaluation included observation of an unannounced fire drill for a fire in the north end of the turbine building, elevation 2,033 feet (T-7), on May 12, 2017.

During this drill, the inspectors evaluated the capability of the fire brigade members, the leadership ability of the brigade leader, the brigade's use of turnout gear and fire-fighting equipment, and the effectiveness of the fire brigade's team operation. The inspectors also reviewed whether the licensee's fire brigade met NRC requirements for training, dedicated size and membership, and equipment.

These activities constituted one annual inspection sample, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On April 17 and 25, 2017, the inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose one plant area, pipe penetration room A, containing risk-significant structures, systems, and components (SSCs) that were susceptible to flooding.

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

In addition, on May 15 and June 19, 2017, the inspectors completed an inspection of underground bunkers susceptible to flooding. The inspectors selected two underground vaults that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment:

- Train A essential service water system manhole MHE4A
- Train A essential service water system manhole MHE5A

The inspectors observed the material condition of the cables and splices contained in the vaults and looked for evidence of cable degradation due to water intrusion. The inspectors verified that the cables and vaults met design requirements.

These activities constituted completion of one flood protection measure sample and one bunker/manhole sample, as defined in Inspection Procedure 71111.06.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, for the licensee's failure to establish adequate measures to ensure that safety-related components remained capable of performing their functions. Specifically, the licensee did not have adequate preventive maintenance or testing tasks established to provide reasonable assurance that floor drains would not become clogged and impact the ability of train A safety-related components to perform their expected functions. As a result, a containment isolation valve was not adequately protected.

Description. On January 12, 2015, the licensee documented Condition Report 90879, which documented minor flood door seal and floor drain screen plugging issues identified by the inspectors. Corrective action 90879-01-04, "Add acceptance criteria to Locked [Preventive Maintenance Activities]," included remedial actions to revise floor drain preventive maintenance activities. Specifically, floor drain preventive maintenance activities for all plant floor drains were to be modified to include acceptance criteria for floor drain screen clogging. Work Order 14-395771-000 was modified and Work Order 15-397860-000 was initiated to perform baseline borescopic inspections of the floor drain system. The licensee began conducting borescopic inspections in November 2015. The work order did not evaluate the acceptability of existing preventive maintenance activities.

On August 2, 2016, in response to inspector questions concerning preventive maintenance and testing activities associated with the floor drain system, the licensee documented Condition Report 106165, which noted that Work Order 15-397860-000 was closed prior to completion, and the borescopic inspections were never completed. Condition Report 106165 also included enhancement actions to provide inspection criteria for Work Orders 15-397860-000 and 15-397860-001 and monitor progress of inspections that were planned for April, May, and July of 2017.

On February 23, 2017, the licensee documented in Condition Report 111210 additional inspector concerns and information needs to resolve preventive maintenance activity bases and the need for the borescopic inspection schedule. The inspectors questioned how the licensee had reasonable assurance and an adequate basis for concluding that the drains were free of debris and capable of performing their design function.

Considering that the current preventive maintenance activity did not include any flow verification, had never included any verification of internal condition since original plant construction, and considering that the drains had never been cleaned, the inspectors concluded that the licensee had not taken adequate measures to ensure that floor drains in safety-related areas remained free of debris and capable of performing their function.

On April 19, 2017, the licensee began conducting inspections to determine drain conditions. Condition Reports 112436, 112503, and 112588, documented wood debris in the train A emergency diesel generator room sump, a 3 inch diameter pipe cap inside a 4 inch diameter train A component cooling water heat exchanger room drain line, and “a collection of loose debris that impede[s] a large cross-section of the drain piping” associated with the train A safety-related piping penetration room. Neither the emergency diesel generator, nor the component cooling water heat exchanger room issues impacted operability of equipment in the affected areas.

On April 25, 2017, the licensee declared the boron injection tank outlet isolation valve (EMHV8801A), the train A safety injection hot leg isolation valve (EMHV8802A), the charging pump to regenerative heat exchanger containment isolation valve (BGHV8105), and the pressurizer vapor sample outer containment isolation valve (SJHV0013) inoperable because the loose debris that impeded the penetration room floor drains had clogged two of three drains. The calculated flood height in the train A safety-related piping penetration room with two drains clogged was determined to be 39.4 inches, which exceeded the maximum expected flood height of 23.2 inches, as described in Calculation FL-11, “Flooding of Auxiliary Building Containment Penetration Areas,” and the height of the subject valves’ electrical conduits were below 39.4 inches. The pressurizer vapor sample outer containment isolation valve had the lowest control or power cable conduit (the termination for this valve is at approximately 30.5 inches).

The licensee cleaned the floor drains and removed the blockage that was obstructing the two floor drains in the train A safety-related piping penetration room, which ensured equipment operability. The licensee also performed additional evaluation of the potentially inoperable valves and determined that the termination points for the EMHV8801A, EMHV8802A, and BGHV8105 valves remained above worst case flood levels, and therefore always maintained their function. In the case of SJHV0013, whose cable termination points were below the possible flood level, the valve is normally in its closed, safe position, and it is a fail closed solenoid operated valve that would close should submergence impact the power supply to the valve when it is open. In the event that the valve was closed and flood waters caused the valve to open, containment isolation valve SJHV0012, which is inside containment and in series with SJHV0013 (both make up penetration 69), is normally closed, located in a different area, and no instances when the SJHV0012 valve was not able to provide the containment isolation function for penetration 69 were identified. Therefore, the train A containment isolation function for penetration 69 was maintained.

On June 14, 2017, the licensee created Work Order 17-429068-000 to evaluate and establish new preventive maintenance tasks for floor drains. Additionally, at the time of this report the licensee was continuing with, but had not yet completed, the remainder of the floor drain inspections for other safety-related areas - these additional extent of condition inspections are required to verify floor drain conditions.

Analysis. The failure to establish adequate measures to ensure that floor drains in safety-related areas remained free of debris and safety-related components remained capable of performing their function, in accordance with Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the SSC and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, one containment isolation valve was not adequately protected from internal flood sources and may not have operated reliably to isolate containment during the design basis internal flood event coincident with the need to isolate containment. Additionally, calculated internal flood height margin to this and other safety-related valves was eliminated or severely reduced.

The inspectors evaluated the finding using Exhibit 3, "Barrier Integrity 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 representing an actual open pathway in the physical integrity of reactor containment (valves, airlocks, etc.), containment isolation system (logic and instrumentation), or heat removal components; and the finding does not involve an actual reduction in function of hydrogen igniters in the reactor containment. Therefore, the inspectors determined the finding was of very low safety significance (Green).

The inspectors determined that the finding has a problem identification and resolution cross-cutting aspect in the area of identification because individuals did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, individuals did not recognize deviations from standards following the documentation of Condition Report 90879 in January 2015, which documented inspector identified floor drain concerns and reviewed preventive maintenance tasks associated with floor drains. This corrective action was an opportunity for the licensee to identify the inadequacy of the floor drain preventive maintenance and testing strategy and reflects current performance [P.1].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that for those SSCs to which this appendix applies, measures shall be established to assure the regulatory requirements and design basis of SSCs are correctly translated into procedures and instructions. Contrary to the above, prior to June 14, 2017, for quality related components in the train A safety-related piping penetration room, to which 10 CFR Part 50, Appendix B applies, the licensee failed to establish measures to assure the regulatory requirements and design basis of SSCs are correctly translated into procedures and instructions. Specifically, the licensee failed to ensure that the safety-related pressurizer vapor sample outer containment isolation valve in the train A safety-related piping penetration room was adequately protected from internal flooding hazards in the event of a design basis internal flood. The licensee evaluated the condition to ensure that a design basis internal flood with two of three floor drains clogged would not have prevented the performance of safety-related functions. The station's immediate corrective actions included entering the condition into the corrective action program, declaring the subject valves inoperable, and cleaning the debris from the clogged floor drains. The floor drains that still need to be inspected do not represent an immediate safety concern because no additional impacts to safety-related equipment have yet been

identified and the additional drain inspections are expected to be completed in a timely manner commensurate with their safety significance. The violation was entered into the licensee's corrective action program as Condition Reports 106165, 111210, 112436, 112503, and 112588. This violation is being treated as a non-cited violation consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000482/2017002-01, "Failure to Ensure Safety-Related Valves were Adequately Protected from Internal Flooding Hazards."

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On May 16, 2017, the inspectors observed a portion of an annual requalification test for licensed operators. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the requalification activities.

These activities constituted completion of one quarterly licensed operator requalification program sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On April 24 and 25, 2017, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity and risk due to power ascension activities and a subsequent partial reactor trip alarm.

In addition, the inspectors assessed the operators' adherence to plant procedures, including the conduct of operations procedure and other operations department policies.

These activities constituted completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

Routine Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed one instance of degraded performance or condition of safety-significant SSCs:

- April 26, 2015, containment spray pump A, failed to start

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of one maintenance effectiveness sample, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed three risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- April 13, 2017, planned maintenance for train B essential service water pump
- May 31, 2017, planned maintenance for turbine driven auxiliary feed water pump
- June 14, 2017, planned maintenance for train B containment spray pump

The inspectors verified that these risk assessments were performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

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

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

Operability Determinations

a. Inspection Scope

The inspectors reviewed two operability determinations that the licensee performed for degraded or nonconforming SSCs:

- March 22, 2017, operability determination of train A component cooling water with the train A essential service water to component cooling water pump suction isolation valve out-of-service
- March 14 and April 5, 2017, operability and past operability determinations of emergency diesel generator fuel oil transfer lines

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded SSC.

These activities constituted completion of two operability and functionality review samples as defined in Inspection Procedure 71111.15.

b. Findings

.1 Failure to Declare Train A Component Cooling Water Inoperable

Introduction. The inspectors identified a Green non-cited violation of Technical Specification Limiting Condition for Operation 3.7.7 for the licensee's failure to place the unit in MODE 3 within 78 hours with the train A component cooling water system inoperable. Specifically, the essential service water emergency make-up to component cooling water train A valve was not declared inoperable when it was out of service, and as a result, train A component cooling water was out of service for longer than its Technical Specification allowed outage time.

Description. Technical Specification Limiting Condition for Operation 3.7.7, "Component Cooling Water (CCW) System," requires in part, that the train A and train B component cooling water system shall be operable; this Limiting Condition for Operation is applicable for MODEs 1 through 4. When the unit is in MODEs 1, 2, 3, or 4, and one of two required trains of component cooling water is inoperable, the out of service train of component cooling water is required to be restored to operable status within 72 hours. When the out of service train of component cooling water is out of service for greater than 72 hours, the station has an additional 6 hours to be in MODE 3, and an additional 36 hours to be in MODE 5.

On March 19, 2017, at 8:38 p.m., the train A essential service water emergency make-up to component cooling water valve was removed from service to support maintenance under clearance order D-EG-A-005, prepared on February 1, 2017, and no

technical specification limiting conditions for operation were entered for the condition. The inspectors noted the configuration, noted that the essential service water emergency make-up to component cooling water valves are labeled with colored placards designating the safety-related power source supplying each valve, reviewed the Technical Specifications, and reviewed Section 9.2.1.2.1.1, "Safety Design Basis," and 9.2.1.2.3, "Safety Evaluation," of the Wolf Creek Updated Safety Analysis Report.

Section B 3.7.7 of the Technical Specification Bases states, "A [component cooling water] train is considered operable when...the associated piping, valves, heat exchanger, and instrumentation and controls required to perform the safety related function are operable."

Essential service water system Section 9.2.1.2.1.1, "Safety Design Basis," of the Updated Safety Analysis Report states, "The [essential service water system] provides emergency make-up to the fuel storage pool and component cooling water systems, and is the backup water supply to the auxiliary feedwater system." Essential service water system Section 9.2.1.2.3, "Safety Evaluation," of the Updated Safety Analysis Report states, "Safety Evaluation Ten – The [essential service water system] is capable of supplying emergency makeup to the fuel storage pool and component cooling water systems and the backup water to the auxiliary feedwater system...The [essential service water system] design assures that the flow requirements are met by operation of an [essential service water system] pump in each train and proper realignment of the associated valves." Section 9.2.5.2.3, "Emergency Makeup Water Requirement," provides additional insight regarding the safety design basis when it states, "Makeup water may also be required to replace evaporative losses or minor leakage from the component cooling water system." Table 9.2-3, "Essential Service Water System Flow Requirements Post-[Loss of Coolant Accident] Operation," lists train A and B required flow as 100 gallons per minute per train for "maximum makeup to component cooling water system."

With the train A essential service water emergency make-up to component cooling water valve out of service to support maintenance, the essential service water system was not capable of supplying emergency makeup to the A train component cooling water system to replace evaporative losses or minor leakage post-accident.

The inspectors informed the licensee of their operability questions and concerns with the train A component cooling water configuration. The licensee documented Condition Report 111808 and evaluated the inspectors' questions. On March 23, 2017, at 6:11 p.m., approximately 93.25 hours since it had been removed from service, the train A essential service water emergency make-up to component cooling water valve was restored to service, and as a result of the inspectors' questions, the licensee documented Licensee Event Report 2017-001-000, "Condition Prohibited by Technical Specifications Due to One Train of Component Cooling Water Inoperable."

The licensee completed a basic cause evaluation for the cause of the failure to declare train A component cooling water inoperable. The licensee's evaluation determined that the issue was historical and was caused by the lack of guidance in the Technical Specification Bases—the licensee's cause evaluation did not discuss the Updated Safety Analysis Report or discuss whether the Updated Safety Analysis Report should have been considered during clearance order preparation or work implementation. The licensee also determined that the train A and train B emergency make-up valves had

been isolated a total of seven times since January 2014 without entering Technical Specification 3.7.7.

The inspectors reviewed the cause evaluation and also reviewed Sections 9.2.1.2.1.1 and 9.2.1.2.3 of the Wolf Creek Updated Safety Analysis Report, as previously described. Finally, the inspectors also noted that Section 6.1.1 of procedure AP 26C-004, "Operability Determination and Functionality Assessment," Revision 34A, states, "Certain conditions render SSCs clearly inoperable...when a[n] SSC is unable to fulfill its specified safety function(s)...due to being removed from service (tagged out)." Considering all of this information the inspectors concluded that it was reasonable for the operators to recognize that train A component cooling water would be made inoperable when the valve was disabled from March 19, 2017, until March 23, 2017. Additionally, the inspectors noted that although the Technical Specification Bases did not specifically discuss the essential service water emergency make-up to component cooling water valve, the Technical Specification Bases did state that valves required to perform the safety related function must be operable to consider train A component cooling water operable. Therefore, the inspectors concluded that the clearance order writing process or those involved in implementing the clearance order should have questioned the basis for the operability treatment of the essential service water emergency make-up to component cooling water valve, which could have prevented the operability issue.

Although the essential service water emergency make-up to A component cooling water valve was out of service, the normal demineralized make-up water supply was available during the March 19 to March 23, 2017, timeframe. Additionally, train A component cooling water was in service and providing cooling throughout the duration of the inoperability period, with no identified leaks requiring makeup. Therefore, the inspectors concluded there was not an actual loss of function of train A component cooling water.

The licensee entered the issue into the corrective action program as Condition Report 111808. The licensee's corrective action plans include revising Technical Specification Bases 3.7.7, training operators on the proposed Technical Specification Bases, and the licensee issued an "Essential Reading" document for operators to review.

Analysis. The failure to declare train A component cooling water inoperable in accordance with Technical Specification Limiting Condition for Operation 3.7.7 is a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, essential service water emergency make-up to train A component cooling water was out of service and train A component cooling water was inoperable for longer than its Technical Specification allowed outage time, and the station did not enter MODE 3 within 78 hours.

The inspectors evaluated 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 for greater than 24 hours. Therefore, the inspectors determined the finding was of very low safety significance (Green).

The inspectors determined that the finding has a human performance cross-cutting aspect in the area of challenge the unknown because individuals did not stop when faced with uncertain conditions, and risks were not evaluated and managed before proceeding. Specifically, during clearance order preparation, implementation, and restoration, individuals did not maintain a questioning attitude during pre-job briefs and job-site reviews to identify and resolve unexpected conditions. This issue is indicative of current performance because the creation and implementation of the clearance order occurred in the last three years [H.11].

Enforcement. Technical Specification Limiting Condition for Operation 3.7.7, “Component Cooling Water (CCW) System,” requires, in part, that train A and train B component cooling water shall be operable in MODES 1 through 4, and when one of two required trains of component cooling water is inoperable, the out of service train of component cooling water is required to be restored to operable status within 72 hours, or the reactor must be in MODE 3 in an additional 6 hours. Contrary to the above, between March 19, 2017, and March 23, 2017, the train A component cooling water system was not operable in MODE 1, and neither the out of service train of component cooling water was restored to operable status within 72 hours, nor the reactor placed in MODE 3 in an additional 6 hours. Specifically, the essential service water make-up to component cooling water train A valve was out of service for approximately 93 hours, which exceeded the Technical Specification allowed outage time. Because no leaks requiring makeup to the CCW system existed, the inspectors concluded there was not an actual loss of function of train A component cooling water. The station’s immediate corrective actions included entering the condition into the corrective action program, evaluating the condition, and issuing an essential reading. The violation was entered into the licensee’s corrective action program as Condition Report 111808. This violation is being treated as a non-cited violation consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000482/2017002-02, “Failure to Declare Train A Component Cooling Water Inoperable.”

.2 Enforcement Action EA-17-064, Enforcement Discretion for Tornado-Generated Missile Protection Noncompliances

Description. Title 10 CFR Part 50, Appendix A, “General Design Criteria for Nuclear Power Plants,” Criterion 2, “Design Bases for Protection Against Natural Phenomena,” states, in part, that SSCs important to safety shall be designed to withstand the effects of natural phenomena, such as tornadoes. Criterion 4, “Environmental and Dynamic Effects Design Basis,” states, in part, that SSCs important to safety shall be appropriately protected against dynamic effects including missiles that may result from events and conditions outside the nuclear power unit. Section 9.5.4.1.1, “Safety Design Bases,” of the Updated Safety Analysis Report describes “Safety Design Basis One” for the emergency diesel engine fuel storage tank system, “[It] is protected from the effects of natural phenomena, such as earthquakes, tornadoes, hurricanes, floods, and external missiles ([General Design Criteria]-2).”

On April 5, 2017, the licensee reevaluated operating experience that was initially entered into the corrective action program and evaluated on March 14, 2017, concerning a low-probability scenario where one or more tornado-generated missiles could impact the emergency fuel oil truck connection lines on the south wall of the diesel generator building. The two non-safety-related connection lines are each connected to the safety-related normal fuel oil transfer lines via a tee connection and a normally closed isolation valve. Direct impact by a tornado-generated missile to either train's truck connection line could impart a load that has not been evaluated on the tee connection to the fuel oil transfer line. Failure of the tee connection could result in the associated emergency diesel generator being incapable of performing its safety function.

The licensee concluded that a potential unanalyzed condition prohibited by Technical Specifications existed for emergency diesel generator fuel transfer line connections, as described in Condition Report 112131 and in LER 2017-002-00, "Tornado Missile Vulnerabilities Result in Condition Prohibited by Technical Specifications."

On February 7, 2017, the NRC issued Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," Revision 1 (ADAMS Accession Number ML16355A286). The EGM referenced a bounding generic risk analysis performed by the NRC staff that concluded that tornado missile vulnerabilities pose a low risk significance to operating nuclear plants. Because of this, the EGM described the conditions under which the NRC staff may exercise enforcement discretion for noncompliance with the current licensing basis for tornado-generated missile protection. Specifically, if the licensee could not meet the technical specification required actions within the required completion time, the EGM allows the staff to exercise enforcement discretion provided the licensee implements initial compensatory measures prior to the expiration of the time allowed by the limiting condition for operation. The compensatory actions should provide additional protection such that the likelihood of tornado missile effects are lessened. The EGM then requires the licensee to implement more comprehensive compensatory measures within approximately 60 days of issue discovery. The compensatory measures must remain in place until permanent repairs are completed, or until the NRC dispositions the non-compliance in accordance with a method acceptable to the NRC such that discretion is no longer needed. Because EGM 15-002 listed Wolf Creek as a Group A plant, enforcement discretion will expire on June 10, 2018.

The licensee declared both diesel generators inoperable, complied with the applicable technical specification action statements, initiated condition report 112131, invoked the enforcement discretion guidance, implemented prompt compensatory measures, and returned the SSCs to an operable-degraded/non-conforming status. The licensee instituted compensatory measures intended to reduce the likelihood of tornado missile effects. These included verifying that guidance was in place for severe weather procedures, abnormal and emergency operating procedures, and FLEX support guidelines, that training on these procedures was current, and that a heightened level of awareness of the vulnerability was established.

Enforcement. Technical Specification 3.8.1 requires, in part, that two diesel generators capable of supplying the onsite Class 1E power distribution subsystem(s) shall be operable and one of the two out of service diesel generators be restored to operable status within 2 hours, or the reactor must be in MODE 3 in an additional 6 hours. Contrary to the above, prior to April 5, 2017, two diesel generators capable of supplying

the onsite Class 1E power distribution subsystem(s) were not operable and neither one of the two out of service diesel generators was restored to operable status within 2 hours nor the reactor placed in MODE 3 in an additional 6 hours. Specifically, the emergency diesel generator fuel oil transfer lines were not designed to withstand the effects of natural phenomena, such as tornadoes. Licensee Event Report 2017-002-00 described the licensee's corrective actions, including eliminating the tornado missile vulnerability by completing Design Change Package 15264, which cut, plugged, and covered the emergency fuel oil truck connection lines with 7/8 inch thick carbon steel plates. The inspectors verified through inspection sampling that the EGM 15-002 criteria were met and that the issue was documented in Condition Reports 111624, 111625, and 112131. Therefore, the NRC exercised enforcement discretion (Enforcement Action (EA)-17-064) in accordance with Section 3.2 of the Enforcement Policy because the violation involves an old design issue that was identified by the licensee as a result of a voluntary initiative, was corrected, and was unlikely to be identified by efforts such as normal surveillances or routinely scheduled quality assurance activities.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On June 2, 2017, the inspectors reviewed a permanent modification to the essential service water system vertical loop vacuum breaker valves. The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the operability of the SSC as modified.

These activities constituted completion of one sample of permanent modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed five post-maintenance testing activities that affected risk-significant SSCs:

- May 15, 2017, station blackout diesel generator A planned maintenance
- May 30, 2017, non-safety auxiliary feedwater pump planned maintenance
- May 31, 2017, turbine driven auxiliary feedwater pump planned maintenance
- June 13 and 14, 2017, safety injection pump B planned maintenance
- June 14, 2017, containment spray pump B planned maintenance

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests

in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constituted completion of five post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed six risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service tests:

- May 2, 2017, STS EF-100B, “[Essential Service Water] System Inservice Pump B and [Essential Service Water] Check Valve Test”

Containment isolation valve surveillance tests:

- May 8, 2017, STS PE-015, “Containment Purge Valve Leakage Test”

Other surveillance tests:

- April 3, 2017, STS IC-260, “[Channel Operational Testing] [Auxiliary Feedwater] Pump Suction Pressure Low Transfer to [Essential Service Water]”
- April 11, 2017, STN RP-002E, “[Emergency Diesel Generator] B Control Circuit and Fuel Oil Transfer Pump Iso[lation] Switch”
- May 4, 2017, STS IC-211A, “Actuation Logic Test Train B Solid State Protection System”
- May 10, 2017, STS IC-447, “Channel Calibration Nuclear Instrumentation System Power Range Incore-Excore”

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constituted completion of six surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

The inspectors evaluated the licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities. The inspectors assessed the licensee's implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures. During the inspection, the inspectors interviewed licensee personnel, walked down various areas in the plant, performed independent radiation dose rate measurements, and observed postings and physical controls. The inspectors reviewed licensee performance in the following areas:

- Radiological hazard assessment, including a review of the plant's radiological source terms and associated radiological hazards. The inspectors also reviewed the licensee's radiological survey program to determine whether radiological hazards were properly identified for routine and non-routine activities and assessed for changes in plant operations.
- Instructions to workers including radiation work permit requirements and restrictions, actions for electronic dosimeter alarms, changing radiological condition, and radioactive material container labeling.
- Contamination and radioactive material control, including release of potentially contaminated material from the radiologically controlled area, radiological survey performance, radiation instrument sensitivities, material control and release criteria, and control and accountability of sealed radioactive sources.
- Radiological hazards control and work coverage. During walk downs of the facility and job performance observations, the inspectors evaluated ambient radiological conditions, radiological postings, adequacy of radiological controls, radiation protection job coverage, and contamination controls. The inspectors also evaluated dosimetry selection and placement as well as the use of dosimetry in areas with significant dose rate gradients. The inspectors examined the licensee's controls for items stored in the spent fuel pool and evaluated airborne radioactivity controls and monitoring.
- High radiation area and very high radiation area controls. During plant walk downs, the inspectors verified the adequacy of posting and physical controls, including areas of the plant with the potential to become risk-significant high radiation areas.
- Radiation worker performance and radiation protection technician proficiency with respect to radiation protection work requirements. The inspectors

determined if workers were aware of significant radiological conditions in their workplace, radiation work permit controls/limits in place, and electronic dosimeter dose and dose rate set points. The inspectors observed radiation protection technician job performance, including the performance of radiation surveys.

- Problem identification and resolution for radiological hazard assessment and exposure controls. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the seven required samples of radiological hazard assessment and exposure control program, as defined in Inspection Procedure 71124.01.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors performed this portion of the attachment as a post-outage review. During the inspection, the inspectors interviewed licensee personnel, reviewed licensee documents, and evaluated licensee performance in the following areas:

- Radiological work planning, including work activities of exposure significance, and radiological work planning ALARA evaluations, initial and revised exposure estimates, and exposure mitigation requirements. The inspectors also verified that the licensee's planning identified appropriate dose reduction techniques, reviewed any inconsistencies between intended and actual work activity doses, and determined if post-job (work activity) reviews were conducted to identify lessons learned.
- Verification of dose estimates and exposure tracking systems, including the basis for exposure estimates, and measures to track, trend, and if necessary reduce occupational doses for ongoing work activities. The inspectors evaluated the licensee's method for adjusting exposure estimates and reviewed the licensee's evaluations of inconsistent or incongruent results from the licensee's intended radiological outcomes.
- Problem identification and resolution for ALARA planning. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of three samples of the five required samples of occupational ALARA planning and controls program, as defined in Inspection Procedure 71124.02, and completes the inspection.

b. Findings

No findings were identified.

2RS3 In-plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspectors evaluated whether the licensee controlled in-plant airborne radioactivity concentrations consistent with ALARA principles and that the use of respiratory protection devices did not pose an undue risk to the wearer. During the inspection, the inspectors interviewed licensee personnel, walked down various areas in the plant, and reviewed licensee performance in the following areas:

- Engineering controls, including the use of permanent and temporary ventilation systems to control airborne radioactivity. The inspectors evaluated installed ventilation systems, including review of procedural guidance, verification the systems were used during high-risk activities, and verification of airflow capacity, flow path, and filter/charcoal unit efficiencies. The inspectors also reviewed the use of temporary ventilation systems used to support work in contaminated areas such as high efficiency particulate air (HEPA)/charcoal negative pressure units. Additionally, the inspectors evaluated the licensee's airborne monitoring protocols, including verification that alarms and set points were appropriate.
- Use of respiratory protection devices, including an evaluation of the licensee's respiratory protection program for use, storage, maintenance, and quality assurance of National Institute for Occupational Safety and Health (NIOSH) certified equipment, air quality and quantity for supplied-air devices and self-contained breathing apparatus (SCBA) bottles, qualification and training of personnel, and user performance.
- Self-contained breathing apparatus for emergency use, including the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, hydrostatic testing of SCBA bottles, status of SCBA staged and ready for use in the plant including vision correction, mask sizes, etc., SCBA surveillance and maintenance records, and personnel qualification, training, and readiness.
- Problem identification and resolution for airborne radioactivity control and mitigation. The inspectors reviewed audits, self-assessments, and corrective action documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the four required samples of in-plant airborne radioactivity control and mitigation program, as defined in Inspection Procedure 71124.03.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

a. Inspection Scope

The inspectors evaluated the accuracy and operability of the licensee's personnel monitoring equipment, verified the accuracy and effectiveness of the licensee's methods for determining total effective dose equivalent, and verified that the licensee was appropriately monitoring occupational dose. The inspectors interviewed licensee personnel, walked down various portions of the plant, and reviewed licensee performance in the following areas:

- Source term characterization, including characterization of radiation types and energies, hard-to-detect isotopes, and scaling factors.
- External dosimetry including National Voluntary Laboratory Accreditation Program (NVLAP) accreditation, storage, issue, use, and processing of active and passive dosimeters.
- Internal dosimetry, including the licensee's use of whole body counting, use of in vitro bioassay methods, dose assessments based on airborne monitoring, and the adequacy of internal dose assessments.
- Special dosimetric situations, including declared pregnant workers, dosimeter placement and assessment of effective dose equivalent for external exposures (EDEX), shallow dose equivalent, and neutron dose assessment.
- Problem identification and resolution for occupational dose assessment. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the five required samples of occupational dose assessment program, as defined in Inspection Procedure 71124.04.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

40A1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors reviewed the licensee's reactor coolant system chemistry sample analyses for the period of April 1, 2016, through March 31, 2017, to verify the accuracy and completeness of the reported data. The inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample on June 15, 2017. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the reactor coolant system specific activity performance indicator for Wolf Creek Nuclear Generating Station, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Reactor Coolant System Identified Leakage (BI02)

a. Inspection Scope

The inspectors reviewed the licensee's records of reactor coolant system identified leakage for the period of April 1, 2016, through March 31, 2017, to verify the accuracy and completeness of the reported data. The inspectors observed the performance of STS BB-006, "RCS Water Inventory Balance Using the NPSI Computer," Revision 16, for June 2, 2017. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the reactor coolant system leakage performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors verified that there were no unplanned exposures or losses of radiological

control over locked high radiation areas and very high radiation areas during the period of October 1, 2016, to March 31, 2017. The inspectors reviewed a sample of radiologically controlled area exit transactions, focusing on those showing exposures greater than 100 millirem. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constitute verification of the occupational exposure control effectiveness performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified

.4 Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed corrective action program records for liquid and gaseous effluent releases, leaks, and spills that occurred between October 1, 2016, and March 31, 2017, in order to verify the performance indicator data submitted to the NRC. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constitute verification of the radiological effluent technical specifications (RETS)/offsite dose calculation manual (ODCM) radiological effluent occurrences performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

40A2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program, performance indicators, quality assessments, system health reports, and other documentation to identify trends that might indicate the existence of a more significant safety issue. The inspectors verified that the licensee was taking corrective actions to address the following identified adverse trends:

- Increased number of inadequate preventive maintenance issues
- Increased number of low-level status control events

These activities constituted completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

The inspectors evaluated a sample of recent issues and events that occurred to determine whether issues were appropriately considered as emerging or adverse trends. The inspectors verified that these issues were addressed within the scope of the corrective action program.

The inspectors' review of the trends identified above produced the following observations and assessments:

- Inspectors reviewed the licensee's response to recent preventive maintenance related issues that have been identified by the inspectors or been self-revealed. Specifically, inspection report 05000482/2017001 (ML17132A257) documented a self-revealing Green non-cited violation associated with the licensee's failure to provide adequate work instructions for preventive maintenance on safety-related equipment, which resulted in non-functionality the Class 1E air conditioner air handling units. Inspection report 05000482/2016004 (ML17045A201) documented an inspector identified Green non-cited violation associated with the licensee's failure to create a preventive maintenance task for emergency diesel generator excitation system diodes, which resulted in degradation of the excitation system diodes associated with the train B emergency diesel generator. Inspection report 05000482/2016003 (ML16314B839) documented an inspector identified Green non-cited violation associated with the licensee's failure to adjust a preventive maintenance task for a lockout relay and test the relay in accordance with vendor recommendations and industry operating experience, which resulted in the lockout relay associated with the train B essential service water pump motor breaker failing as-found testing.

The licensee had not identified an adverse trend or evaluated possible common causes between the apparently related issues.

The inspectors determined that a possible emerging trend existed, which warrants additional evaluation. The licensee documented the inspectors' concerns in condition report 114437.

- Inspectors reviewed the licensee's response to three status control events during the first quarter of 2017, which related to the trend evaluation for operator fundamentals involving monitoring, as discussed in inspection report 05000482/2016004 (ML17045A201). Specifically, 2017 Condition Report 110865 documented a turbine sump being overwhelmed due to an incorrect valve being manipulated; 2017 Condition Report 111073 documented a hand switch that was taken to stop instead of normal after stop during relay testing; and 2017 Condition Report 111174 documented an issue associated with train A emergency diesel generator instrument air outlet valves for both pressure regulators being incorrectly isolated during post maintenance testing activities prior to returning the emergency diesel generator to service—this resulted in a lack of lube oil pressure indication and a trip of the emergency diesel during post maintenance testing.

In each case, the status control events were of minor significance, but operations self-identified an area for improvement associated with these status control events and performed a common cause evaluation associated with condition report 111214. The licensee concluded that the events were related to teamwork, including inadequate peer checking and use of resources. Actions taken included a stand down with all operations personnel, each crew will have three reactor operators, and a teamwork dynamic learning activity was completed in May 2017.

The inspectors evaluated the licensee's response to this trend and determined the actions were adequate to address the identified causes.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected three issues for an in-depth follow-up:

- On January 31, 2017, at 5:50 p.m., the licensee made an unplanned entry into Technical Specification 3.6.6, "Containment Spray and Cooling Systems," Condition C, and Technical Requirements Manual 3.8.11, "Containment Penetration Conductor Overcurrent Protective Devices," Condition A, after containment cooler D lost indication and tripped during a transfer from slow to fast speed. This resulted in containment cooler fan D being declared inoperable.

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors assessed the licensee's prioritization and planned corrective actions and whether these actions were adequate to correct the condition. The inspectors noted that

the cause evaluation was being revised to ensure the appropriate causes, corrective actions, and extent of condition reviews would be identified and completed.

- On March 15, 2017, during the performance of STS BN-201B, “RWST to Refuel Pool Isolation In-Service Valve Test,” Revision 7, BN HCV-8800B failed to stroke closed within the required time of 10.0 seconds. The actual stroke time was 10.5 seconds. STS BN-201B is a quarterly test, and the valve also failed to stroke closed within the required time on December 13, 2016. Condition report 109980 documents the December 13, 2016, stroke time of 10.9 seconds.

The inspectors assessed the licensee’s problem identification threshold, cause analyses, and extent of condition reviews. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

- On March 4, 2013, condition report 65017 documented event notification report 48797 and industry wedge pin failures in Anchor Darling motor operated double disc gate valves with threaded stem to upper wedge connections.

The inspectors assessed the licensee’s problem identification threshold, evaluation, and extent of condition reviews. The inspectors verified that the licensee appropriately prioritized the completed corrective actions and that these actions were adequate to correct the condition.

These activities constituted completion of three annual follow-up samples as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000482/2017-001-00: Condition Prohibited by Technical Specifications Due to One Train of Component Cooling Water Inoperable

On March 19, 2017, with the plant in MODE 1, planned work activities isolated emergency make-up from the essential service water system to train A component cooling water. The inspectors questioned the configuration, and the licensee determined that train A component cooling water was inoperable when emergency make-up from essential service water was isolated and the allowed outage time of Technical Specification Limiting Condition for Operation 3.7.7 was exceeded. The emergency make-up valve was returned to service on March 23, 2017. The licensee determined that adequate information was not incorporated into Technical Specification Bases 3.7.7.

The licensee documented condition report 111808, training request 2017-0098, and essential reading 2017-013. The inspectors reviewed this issue and determined that this

issue constituted an NRC-identified violation, and the enforcement aspects of this violation are discussed in Section 1R15 of this inspection report.

This LER is closed.

.2 (Closed) LER 05000482/2017-002-00: Tornado Missile Vulnerabilities Result in Condition Prohibited by Technical Specifications

On April 5, 2017, with the plant in MODE 1, the licensee submitted an 8-hour, non-emergency report (Event Notification 52666) to the NRC in accordance with 10 CFR 50.72 after determining that safety-related fuel oil transfer lines inside the diesel generator building could be damaged if tornado generated missiles struck the non-safety-related truck connections to these lines. Since both fuel oil transfer lines are required to supply fuel to the emergency diesel generators, both emergency diesel generators were declared inoperable.

The licensee documented condition report 112131, completed a basic cause evaluation, and implemented design change package 15264 to permanently eliminate the vulnerability, which was implemented May 31, 2017. The licensee's immediate corrective actions included implementing compensatory measures consistent with EGM 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance." The inspectors reviewed this issue and determined that it was appropriate to exercise enforcement discretion for the licensee's actions on and after April 5, 2017, and not take enforcement action for the required actions of Technical Specification 3.8.1, "AC Sources – Operating," since the non-compliances were resolved before June 10, 2018 (EA-17-064). The enforcement aspects are discussed in Section 1R15 of this inspection report.

This LER is closed.

These activities constituted completion of two event follow-up samples, as defined in Inspection Procedure 71153.

40A6 Meetings, Including Exit

Exit Meeting Summary

On May 12, 2017, regional inspectors presented the radiation safety inspection results to Mr. C. Reasoner, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On June 16, 2017, regional inspectors presented the radiation safety inspection results to Mr. S. Smith, Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On July 20, 2017, the resident inspectors presented the inspection results to Mr. C. Reasoner, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Adams, Supervisor, Radiation Protection
J. Ashley, Supervisor, System Engineering
R. Audano, Superintendent, Maintenance
R. Ayers, Supervisor, Radiation Protection
T. Baban, Manager, Engineering Programs
W. Brandt, Shift Manager
K. Clark, Technician, Fire Protection
M. Corbin, Superintendent, Security Operations
J. Cuffe, Supervisor, Radiation Protection
T. East, Superintendent, Emergency Planning
J. Edwards, Manager, Operations
R. Fincher, Manager, Quality
R. French, Supervisor, Radiation Protection
J. Fritton, Oversight
G. Fugate, Director, Plant Support
L. Fure, Master Technician, Radiation Protection
A. Gilliam, Technician, Radiation Protection
N. Good, Licensing Engineer
C. Gross, Manager, Chemistry
C. Hafenstine, Manager, Regulatory Affairs
D. Hall, Manager, Strategic Projects
A. Heflin, President and Chief Executive Officer
P. Herrman, Manager, Design Engineering
R. Hobby, Licensing Engineer
J. Isch, Superintendent, Operations Work Controls
K. Jay, Manager, Radiation Protection
R. Jung, Instructor, Fire Protection
J. Knust, Licensing Engineer
R. Lane, Manager, Integrated Plant Scheduling
B. Lee, Licensed Supervising Instructor
D. Mand, Director, Engineering
J. McCoy, Vice President, Engineering
W. Muilenburg, Supervisor, Licensing
L. Ratzlaff, Manager, Maintenance
C. Reasoner, Site Vice President
J. Schepers, Supervisor, Radiation Protection
M. Skiles, Manager, Security
T. Slenker, Supervisor, Operations Support
S. Smith, Plant Manager
L. Stone, Licensing Engineer
A. Stull, Vice President and Chief Administrative Officer
J. Suter, Supervisor, Fire Protection
M. Tate, Superintendent, Security Operations
J. Yunk, Manager, Training

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000482/2017002-01	NCV	Failure to Ensure Safety-Related Valves were Adequately Protected from Internal Flooding Hazards (Section 1R06)
05000482/2017002-02	NCV	Failure to Declare Train A Component Cooling Water Inoperable (Section 1R15)

Closed

05000482/2017-001-00	LER	Condition Prohibited by Technical Specifications Due to One Train of Component Cooling Water Inoperable
05000482/2017-002-00	LER	Tornado Missile Vulnerabilities Result in Condition Prohibited by Technical Specifications

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 14-006	Severe Weather	17

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12AL01	Piping & Instrumentation Diagram Auxiliary Feedwater System	28
M-12EF01	Piping and Instrumentation Diagram Essential SVC Water System	29

Condition Reports

113136

Section 1R04: Equipment Alignment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CKL AL-120	Auxiliary Feedwater Normal Lineup	42
CKL BG-120	Chemical and Volume Control System Normal Valve Lineup	41
CKL EF-120	Essential Service Water Valve, Breaker and Switch Lineup	54

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CKL EM-120	Safety Injection System Lineup Checklists	31
CKL EN-120	Containment Spray System Lineup	15A

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EID-0018	P&ID System Composite System BG, BN, EM, EJ, EP	1
M-12AL01	Piping & Instrumentation Diagram Auxiliary Feedwater System	28
M-12BG01	Piping & Instrumentation Diagram Chemical and Volume Control System	19
M-12BG03	Piping and Instrumentation Diagram Chemical & Volume Control System	48
M-12EA01	Piping & Instrumentation Diagram Service Water System	21
M-12EF01	Piping and Instrumentation Diagram Essential SVC Water System	29
M-12EF02	Piping & Instrumentation Diagram Essential Service Water System	42
M-12EF03	Piping & Instrumentation Diagram Essential Service Water System	19
M-12EG01	Piping & Instrumentation Diagram Component Cooling Water System	24
M-12EG02	Piping & Instrumentation Diagram Component Cooling Water System	27
M-12EM01	Piping & Instrumentation Diagram High Pressure Coolant Injection System	43
M-12EN01	Piping and Instrumentation Diagram Containment Spray System	13

Condition Reports

112179	112180	112181	112668	112669
112670	112671	112759	112761	112765
112829	113304	113333	113334	113458
113484	113971			

Work Orders

98-200354-000

Section 1R05: Fire Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 10-001	Fire Brigade Equipment Inventory, Maintenance and Cleaning	12
AI 10-001	Fire Brigade Equipment Inventory, Maintenance and Cleaning	13
AP 10-105	Fire Protection Training and Drills	22
AP 10-106	Fire Preplans	17
AP 10-106	Fire Preplans	18

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-1F3601	Fire Detection/Protection System Control [Building] & Communication [Corridor] – EL. 2061'-6" & EL. 2073'-6"	2
E-1F9905	Fire Hazard Analysis	8
E-1R8900	Raceway Notes, Symbols and Details	29
M-663-00017	Penetration Seal Typical Details	W22
M-650A-00048	Upper Cable Spreading Room Pre-Action Sprinkler System	W06

Condition Reports

112843	113012	113849	114118	114183
114184				

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
APF 10-105-02	Fire Drill Scenario and Critique Report	3
APF 10-105-02	Fire Drill Scenario and Critique Report, Unannounced, Backshift	May 12, 2017

Section 1R06: Flood Protection Measures

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12BG01	Piping & Instrumentation Chemical and Volume Control System	19
M-12BG03	Piping & Instrumentation Diagram Chemical & Volume Control System	48
M-12SJ01	Piping and Instrumentation Diagram Nuclear Sampling System	15

Condition Reports

51622	90879	94473	106165	111210
111358	111359	112036	112097	112436
112503	112588	112590	112594	113211

Work Orders

07-299627-004	14-395771-000	15-397860-000	15-397860-001	16-416247-000
16-416247-001	16-416247-003	16-416247-005	17-429068-000	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FL-11	Flooding of Auxiliary Building Containment Penetration Areas	1
FL-11-001-CN001	Flooding of Auxiliary Building Containment Penetration Areas	1

Section 1R11: Licensed Operator Requalification Program

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ALR 00-083C	Rx Partial Trip	5A
AP 21-001	Conduct of Operations	79
AP 21-001	Conduct of Operations	80
GEN 00-004	Power Operation	89
STS SE-001	Power Range Adjustment to Calorimetric	34

Condition Reports

112548

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Operations Requalification Cycle 17-5 Annual Exams	April 25, 2017
16-07	Requalification Exam	1
16-08	2017 Annual Requalification Exam	1

Section 1R12: Maintenance Effectiveness

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MPE E009Q-03	Inspection and Testing of Siemens Vacuum Circuit Breakers	10
STN IC-459	Channel Calibration Spray Additive Tank Level Loop ENLPL0015	6C
STN IC-460	Channel Calibration Spray Additive Tank Level Loop ENLPL0016	7C
STS EN-003B	Train B Spray Additive System Flow Test	5
STS EN-207	CTMT Spray Sump Valve Operability Test	0

Condition Reports

89095 90486 95773 96614 109140

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
85309	Functional Failure Determination Checklist	December 11, 2014
95773	Functional Failure Determination Checklist	May 28, 2015
95778	Functional Failure Determination Checklist	May 28, 2015
EN	System Health Report	April 1 to June 30, 2016
EN-01	Maintenance Rule Final Scope Evaluation	Printed June 13, 2017
EN-02	Maintenance Rule Final Scope Evaluation	Printed June 13, 2017

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
EN-03	Maintenance Rule Final Scope Evaluation	Printed June 13, 2017
EN-04	Maintenance Rule Final Scope Evaluation	Printed June 13, 2017
STS IC-643A	Slave Relay Test K643 Train A Containment Spray	Completed February 23, 2017
STS IC-644A	Slave Relay Test K644 Train A Containment Spray	Completed March 1, 2017

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 15D-026	Control of Cyber Security Tamper Indicating Devices (TID)	2
AI 22C-013	Protected Equipment Program	19
AP 22C-003	On-Line Nuclear Safety and Generation Risk Assessment	22
AP 22C-007	Risk Management and Contingency Planning	11

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12AL01	Piping & Instrumentation Diagram Auxiliary Feedwater System	28
M-12EF01	Piping and Instrumentation Diagram Essential SVC Water System	29
M-12EF02	Piping & Instrumentation Diagram Essential Service Water System	42
M-12EF03	Piping & Instrumentation Diagram Essential Service Water System	19

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
2017-0203	On-Line Nuclear Safety and Generation Risk Assessment; Risk Assessment Dates – April 10, 2017, through April 16, 2017	April 6, 2017

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
2017-0210	On-Line Nuclear Safety and Generation Risk Assessment; Risk Assessment Dates – May 29, 2017, through June 4, 2017	May 25, 2017

Section 1R15: Operability Evaluations

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 26C-004	Operability Determination and Functionality Assessment	33
AP 26C-004	Operability Determination and Functionality Assessment	34
AP 26C-004	Operability Determination and Functionality Assessment	34A
AP 28-001	Operability Evaluations	24

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12JE01	Piping & Instrumentation Diagram Emergency Fuel Oil System	19

Condition Reports

111624	111625	111808	112131	113699
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
APF 21-001-02	Night Shift Control Room Turnover Form	March 21, 2017
APF 28-001-01	Operability Evaluation	12
D-EG-A-005	EGHV0013	Printed March 23, 2017
D-EG-A-005A	EGHV0013	Printed March 20, 2017
D-EG-A-005B	EGHV0013	Printed March 23, 2017
LER 2017-001-00	Condition Prohibited by Technical Specifications Due to One Train of Component Cooling Water Inoperable	May 17, 2017
LER 2017-002-00	Tornado Missile Vulnerabilities Result in Condition Prohibited by Technical Specifications	May 31, 2017

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
PSA-05-0013	WCGS PRA Component Cooling Water System Notebook – 2002 Update	0

Section 1R18: Plant Modifications

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 05-005	Design, Implementation, and Configuration Control of Modifications	25
AI 05-025	Post Modification Testing Plan	2

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
WIP-M-16EF03-066-A-1	Hanger Drawing Control Index	0
WIP-M-16EF05-066-A-1	Hanger Drawing Control Index	0
WIP-M-16EF19-001-A-1	Hanger Drawing Control Index	0
WIP-M-16EF19-001-B-1	Hanger Drawing Control Index	0
WIP-M-18EF13-010-A-1	Hanger Details Small Pipes Miscellaneous Details Essential Service Water System	0
WIP-M-223F-00003-W03-A-1	Crispin Model VR-41 Relief Check Valve Flanged Ends Size 4 Fig. 150-VR	0
WIP-M-223F-00004-W01-A-1	Crispin Model VR-41 Relief Check Valve Flanged Size 4 150LB Carbon Steel with Resilient Seat	0

Condition Reports

101760

Work Orders

16-410599-000	16-410599-001	16-410599-004	17-422064-000	17-422064-001
17-422064-002	17-422239-000	17-422239-001	17-422239-004	17-422239-012
17-423329-000	17-423329-001	17-423329-004	17-423329-012	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
APF 05-024-01	Minor Change Package (MCP): ESW Water Hammer Vacuum Breaker Valves Spring Replacement - 015214	February 16, 2017
APF 05-024-01	Minor Change Package (MCP): ESW Water Hammer Vacuum Breaker Valves Spring Replacement - 015230	April 13, 2017
APF 26A-003-01	Applicability Determination: ESW Water Hammer Vacuum Breaker Valves Spring Replacement - 015214	February 14, 2017
APF 26A-003-01	Applicability Determination: ESW Water Hammer Vacuum Breaker Valves Spring Replacement - 015230	April 12, 2017
APF 26A-003-02	50.59 Screen: ESW Water Hammer Vacuum Breaker Valves Spring Replacement - 015214	April 4, 2017
APF 26A-003-02	50.59 Screen: ESW Water Hammer Vacuum Breaker Valves Spring Replacement - 015230	April 12, 2017
EF01-22-003-CN002	Calculation Change Notice: CP 15214 R01	3
EF01-25-003-CN002	Calculation Change Notice: CP 15214 R01	3
EF02-06-007-CN005	Calculation Change Notice: CP 15230 R01	7
EF03-58-001-CN003	Calculation Change Notice: CP 15230 Rev.1	1
P-009A-010-CN001	Design Verification Report: Piping Stress Analysis for Essential Service Water System, Train "B" Return Line	
P-011AB-007-CN001	Calculation Change Notice: Piping Stress Analysis For Essential Service Water, Train "A" Return Line	7

Section 1R19: Post-Maintenance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STN AP-101	NSAFP Recirc Test	13
STN EG-003B	CCW Train B Void Monitoring and Venting	7
STN KU-010	Operation of SBO DG Test	7
STS AL-103	TDAFW Pump Inservice Pump Test	69
STS AL-103	Turbine Driven AFW Pump Inservice Pump Test	69
STS EM-100B	Safety Injection Pump "B" Inservice Pump Test	34
STS EN-100B	Containment Spray Pump B Inservice Pump Test	31

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STS EN-007B	Containment Spray Train B Void Monitoring and Venting	0
SYS EC-121	Recirc of the RWST Through the Fuel Pool Cleanup System	19

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12EM01	Piping & Instrumentation Diagram High Pressure Coolant Injection System	43

Condition Reports

113453 113694

Work Orders

16-414754-000 16-417183-000 16-417672-001 16-417672-005 16-419426-000
16-419455-000 16-419472-001 17-421226-000

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
APF 29B-003-01	Surveillance Test Routing Sheet – CCW Train B Void Monitoring and Venting	Completed June 13, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – Containment Spray Train B Void Monitoring and Venting	Completed June 12, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – NSAFP Recirc Test	Completed May 30, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – Safety Injection Pump “B” Inservice Pump Test	Completed June 13, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – Safety Injection Pump “B” Inservice Pump Test	Completed June 14, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – Turbine Driven AFW Pump Inservice Pump Test	Completed May 31, 2017
D-AL-T-003	KFC02	Completed May 31, 2017

Section 1R22: Surveillance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 21-001	Conduct of Operations	79
STN RP-002E	EDG B Control CKT and FO XFER Pump Iso Switch	3
STS EF-100B	ESW System Inservice Pump B & ESW B Check Valve Test	48A
STS IC-211B	Actuation Logic Test Train B Solid State Protection System	37A
STS IC-260	Channel Operational Test Auxiliary Feedwater Pump Suction Pressure Low Transfer to ESW	15A
STS IC-447	Channel Calibration Nuclear Instrumentation System Power Range Incore-Excore	44
STS IC-453B	Channel Calibration Fuel Building Exhaust Radiation Monitor GG RE-0028	19
STS PE-015	Containment Purge Valve Leakage Test	22

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12EF01	Piping and Instrumentation Diagram Essential SVC Water System	29
M-12EF02	Piping & Instrumentation Diagram Essential Service Water System	42

Condition Reports

111888 112830

Work Orders

16-417303-000 16-420125-000 16-420250-000 17-427320-000

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
APF 29B-003-01	Surveillance Test Routing Sheet – Actuation Logic Test Train B Solid State Protection System	Completed May 4, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – Channel Calibration Nuclear Instrumentation System Power Range Incore - Excore	Completed May 10, 2017

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 19D-100	Radioactive Source Program	5
AP 25A-001	Radiation Protection Manual	17
AP 25A-200	Access to Locked High or Very High Radiation Areas	28
AP 25A-700	Use of Temporary Lead Shielding for LHRA or VHRA Barricades	15
AP 25B-100	Radiation Worker Guidelines	50
AP 25B-200	Radiography Guidelines	15A
FHP 02-019	Spent Fuel Pool Exclusion Area	5
RPP 01-105	Health Physics Organization, Responsibilities, and Code of Conduct	20
RPP 02-105	RWP [Radiation Work Permit]	44A
RPP-02-205	Radiological Survey Frequency Requirements	13A
RPP-02-210	Radiological Survey Methods	48A
RPP 02-215	Posting of Radiological Controlled Areas	32
RPP-02-405	RCA Access Control	20
RPP 02-515	Release of Material From the RCA	33
RPP 02-605	Control and Inventory of Radiation Sources	18
RPP-03-406	RP-RP Dosimetry / Records	12
RPP 03-407	Testing of Portal Monitors as Passive Whole Body Counters	1A
RPP 05-319	SAM 11 Operation	4
RPP 05-707	Operation of Whole Body Counters	9
RPP 05-800	Operation and Spectrum Analysis with the Intrinsic Germanium Count System	2
RPP 05-906	Tri-Nuclear Underwater Filter/Vacuum Operation	11A
RPP 06-318	Thermo-Fisher Scientific SAM 12 Calibration	1A
RPP 06-319	SAM 11 Calibration	1
RPP 07-212	Requirements of Radioactive Materials Stored Outdoors	0
RPP 08-105	Underwater Dive Operations	11

Condition Reports

107705 110356 110847 111305 112513

Radiological Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision</u>
20163055	Water Jet Peening on Reactor Vessel Nozzles	1
20166031	Containment 2047 Reactor Vessel Head and Head Stand Area	1
20170010	Station Personnel Access to High Radiation Areas	3
20170020	Waste Processing Activities and Locked High Radiation Area Access	1

Air Sample Surveys

<u>Title</u>	<u>Date</u>
Air Sample Log and Selected Air Sample Calculation Work Sheets (01/01/16-05/09/17)	May 9, 2017

Audits, Self-Assessments, and Surveillances

<u>Number</u>	<u>Title</u>	<u>Date</u>
QA-2016-Fourth Quarter-RP-FAO	QA Functional Area Owner Quarterly Oversight Perspective - Radiological Protection	January 2017
QA-2017-0321	QA Assessment of Occupational Exposure Control Effectiveness	May 3, 2017
QH-2016-1346	USAR Changes and Logic for Discontinuing Daily Monitoring with Portable Continuous Air Monitors (AMS-4s)	October 5, 2016
QH-2017-0313	Evaluating the Effectiveness of Contamination and Radioactive Material Control Measures at the RCA	March 7, 2017
QH-2017-1396	Wolf Creek Control for Tritium Gun Sights	January 9, 2017
QH-2017-1435	Evaluating Collective Dose Reduction Process for Scaffold Frames Left In Containment at Power	March 8, 2017

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Fuel Pool (Non-Fuel) Inventory	April 28, 2017
	Category 1 and 2 Radioactive Source Inventory	April 28, 2017
	Listing of Plant Modifications – 01/01/16 – 05/09/17	May 9, 2017

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
STS HP-001	Sealed Source Surveillance Tests	January 25, 2017
STS HP-001	Sealed Source Surveillance Test	April 5, 2017
STS HP-001	Sealed Source Surveillance Tests	July 7, 2016
WC011005	Small Article Monitor (SAM) 11 Calibration	February 27, 2017
WC093361	Small Article Monitor (SAM) 12 Calibration	October 20, 2016

Section 2RS2: Occupational ALARA Planning and Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 25A-401	ALARA Program	24
AP 25A-410	ALARA Committee	22A
AP 25B-300	RWP Program	24A
RPP 02-105	Radiation Work Permits (RWP)	45

Condition Reports

96809	108513	109240	110252	112389
113762				

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
16-01-RP/PC	Quality Assurance Audit Report: Radiological Protection/Process Control	February 24, 2016
QH-2017-1505	Quick Hit Assessment: NRC IP 71124.02 Assessment	June 13, 2017

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision</u>
155001	Reactor Cavity Decon Activities	3
161000	RP Rover for RF21	1
161102	Incore Tunnel Inspections and Maintenance	4

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision</u>
163049	Under RV Head Full Body Entry to Support RV head Inspections	1
163220	Primary Side Steam Generator Eddy Current Testing	1
164482	Remove/install Canopy Seal Weld Clamps from the top of the Seismic Platform at CRDM nozzles 11, 12, 23, 26, 77	1
165048	Containment High Contamination Decon of Reactor Head	0
165049	RP Decon Group Special Decon Activities	4

ALARA Review Packages, Post-job ALARA Reviews, and In-Progress Reviews

<u>RWP Number</u>	<u>Title</u>	<u>Date</u>
155001	ALARA Review Package	August 5, 2015
161000	ALARA Review Package	May 9, 2016
161000	In-Progress Review (50%)	September 30, 2016
161000	In-Progress Review (80%)	October 22, 2016
161000	Post-job ALARA Review	February 22, 2017
163049	ALARA Review Package	October 15, 2016
163220	ALARA Review Package	September 8, 2016
164482	ALARA Review Package	October 7, 2016
164482	In-Progress Review (50%)	October 16, 2016
164482	In-Progress Review (80%)	October 18, 2016
164482	Post-job ALARA Review	November 23, 2016
165048	ALARA Review Package	August 27, 2016
165048	In-Progress Review (50%)	October 26, 2016
165048	Post-job ALARA Review	November 22, 2016
165049	ALARA Review Package	August 16, 2016
165049	In-Progress Review (Exposure Estimate Revision)	September 13, 2016
165049	In-Progress Review (50%)	September 19, 2016

ALARA Review Packages, Post-job ALARA Reviews, and In-Progress Reviews

<u>RWP Number</u>	<u>Title</u>	<u>Date</u>
165049	Post-job ALARA Review	November 28, 2016

Miscellaneous Documents

<u>Title</u>	<u>Date</u>
ALARA Sub-Committee Meeting Minutes	September 22, 2016
ALARA Sub-Committee Meeting Minutes	September 29, 2016
ALARA Sub-Committee Meeting Minutes	October 23, 2016
ALARA Sub-Committee Meeting Minutes	November 11, 2016
RF 21 and Pre RF21 Forced Outage: Radiation Protection Summary	January 9, 2017

Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 10-001	Fire Brigade Equipment Inventory, Maintenance and Cleaning	12
AI 10-004	Air Fill Station Operation	4
AI 14-009	Industrial Respiratory Protection Program	7
AP-06-002	Radiological Emergency Response Plan	18A
AP 25B-600	Respiratory Protection Program at Wolf Creek	9
RPP 03-205	DAC-Hour Tracking	17
RPP 03-310	Respiratory Protection Equipment	19A
RPP 05-925	HEPA Portable Ventilation Unit Maintenance and Use	7
STN PE-003	HEPA Filter In-Place Leak Test Non-Safety Related Units	10A
STN PE-004	Charcoal Adsorber In-Place Leak Test Non-Safety Related Units	10
STN PE-055	DOP Testing of Portable Ventilation and Vacuum Units	5A
STS PE-005	HEPA Filter In-Place Leak Test Safety Related Units	12
STS PE-006	Charcoal Adsorber In-Place Leak Test Safety Related Units	14

Condition Reports

93255	93399	96446	97019	99533
102046	102823	103915	105928	

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
	RF20 Alpha Characterization Study	October 22, 2015
QA-2017-0317	QA Audit Report: Use of Respiratory Protection Devices	April 12, 2017

In-Place Filter Testing

<u>Number</u>	<u>Title</u>	<u>Date</u>
STN PE-003 (TSC FF-1)	HEPA Filter In-Place Leak Test Non-Safety Related Units	December 28, 2016
STN PE-004 (TSC FF-1)	Charcoal Adsorber In-Place Leak Test Non-Safety Related Units	December 28, 2016
STS PE-005 (FGK01A)	HEPA Filter In-Place Leak Test Safety Related Units	February 3, 2017
STS PE-006 (FGK01A)	Charcoal Adsorber In-Place Leak Test Safety Related Units	February 3, 2017
STS PE-006 (FGK01B)	Charcoal Adsorber In-Place Leak Test Safety Related Units	April 2, 2017

TEDE / ALARA Reviews

<u>RWP Number</u>	<u>Title</u>	<u>Date</u>
162210	Respiratory Protection / TEDE Evaluation Worksheet	June 6, 2016
162220	Respiratory Protection / TEDE Evaluation Worksheet	May 12, 2016
170006	Respiratory Protection / TEDE Evaluation Worksheet	October 12, 2016
170011	Respiratory Protection / TEDE Evaluation Worksheet	October 11, 2016

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Posi 3 USB Test Results Functional Test: Scott Airpack	2016

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
17-13194	Air/Gas Quality Report & Certificate NFPA 1989-2013 (N) – Trace Analytics LLC	April 26, 2017
AIF 21-016-02	Time Verification Forms for Donning SCBA	2017
AIF 10-001-02	SCBA Inspection [3.2.1]	May 4, 2017
GT1245302	Fire Protection Training Lesson Plan for Self-Contained Breathing Apparatus User – Rev. 16	May 9, 2016
GT1245302	Training Records for Self-Contained Breathing Apparatus	May 10, 2017
RPF 02-210-3	Air Sample Log – DAC value >.2	2016-2017

Section 2RS4: Occupational Dose Assessment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RPP-01-105	Health Physics Organization, Responsibilities, and Code of Conduct	20
RPP 02-210	Radiation Survey Methods	48A
RPP 03-121	Determination of Neutron Dose	8
RPP 03-122	Skin Dose Calculations	13A
RPP 03-205	DAC-Hour Tracking	17
RPP 03-210	Internal Exposure Calculations and Evaluations	16
RPP 03-406	RP Dosimetry / Records	12
RPP 05-707	Operation of Whole Body Counters	9

Condition Reports

95099	95107	97498	102798	102801
107242	107276	107994	108361	109961
111305	112114	112395	113762	

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
16-01-RP/PC	Quality Assurance Audit Report: Radiological Protection/Process Control	February 11, 2016
QH-2016-1356	Benchmarking for passive entry and exit whole body counts	October 5, 2016

Audits and Self-Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
QH-2017-1505	Quick Hit Assessment: NRC IP 71124.04 Assessment	June 13, 2017

Waste Stream Analysis Reports

<u>Number</u>	<u>Title</u>	<u>Date</u>
396456001	CVCS Resins	January 26, 2016
404868001	Drum Dryer Waste Tank	August 10, 2016
418290001	RCS Filters	February 22, 2017
418290002	SFP Filters	February 22, 2017
418290003	Dry Active Waste	February 20, 2017
418290004	Radwaste Resin	March 1, 2017

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	2015 Whole Body Counting Reports	2015
	2016 Whole Body Counting Reports	2016
	DAC Hour Information for All Individuals	2015 and 2016
	NRC Form 5 for Radworkers (7 in total)	2015 and 2016
17025:2005	NVLAP Certificate of Accreditation – Ionizing Radiation Dosimetry	2017

Section 40A1: Performance Indicator Verification

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 26A-007	NRC Performance Indicators	11
AI 26A-008	NRC / INPO / WANO Performance Indicator and MOR Reporting	1
Chemistry Desktop Guide	NRC / INPO / WANO Performance Indicator Guidelines	1

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
Health Physics Desktop Instruction	Updating the INPO HP CDE Database	0
STS BB-006	RCS Water Inventory Balance Using the NPIS Computer	16

Condition Reports

112244

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
APF 29B-003-01	Surveillance Test Routing Sheet – RCS Water Inventory Balance Using the NPIS Computer	Completed June 2, 2017
APF 29B-003-01	Surveillance Test Routing Sheet – RCS Water Inventory Balance Using the NPIS Computer	Completed June 3, 2017
Database Searches	RWP Entries Greater than Dose and Dose-Rate Alarm Setting (01/01/2016 through 05/09/2017)	May 9, 2017
GRP-U1GC2017- 006	Gaseous Radioactive Release Permit	January 12, 2017
LRP-U1LB2016- 072	Liquid Radioactive Release Permit	November 15, 2016
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7

Section 40A2: Identification and Resolution of Problems

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AI 15C-012	Procedure Change Request (PCR) Module	1
AI 16C-006	Troubleshooting	8
AI 23D-003	MOV Trending and Periodic Verification Program	2
AI 28A-023	Evaluation of Maintenance Rule Functional Failure CRs	4
AP 15C-001	Procedure Writer's Guide	30A
AP 15C-004	Preparation, Review and Approval of Procedures, Instructions and Forms	52
AP 16B-003	Planning and Scheduling Preventive Maintenance	8
AP 29B-003	Surveillance Testing	15

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STS BN-201B	BN HCV-8800B, RWST To Refuel Pool Iso Inservice Valve Test	6
STS GN-001	Containment Cooling Fans Operability Test	10
STS IC-616B	Slave Relay Test K616 Train B Safety Injection	19
STS IC-616B	Slave Relay Test K616 Train B Safety Injection	20
SYS EC-121	Recirc of the RWST Through the Fuel Pool Cleanup System	19
SYS GN-120	Containment Cooling System Operation	42
SYS GN-120	Containment Cooling System Operation	43

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-018 -00852	SZ. 5 2SP-IWD Schematic	W12
E-018 -00853	Wiring Diagram 2SP IWD (Size 5)	W12
E-13GN02	Schematic Diagrams Containment Cooler Fans A & C	16
E-13GN02A	Schematic Diagrams Containment Cooler Fans B & D	17
M-12BN01	Piping & Instrumentation Diagram Borated Refueling Water Storage System	18
M-12GN01	Piping and Instrumentation Diagram Containment Cooling System	24
M-12GN02	Piping & Instrumentation Diagram Containment Cooling System	3
M-223A-00079	12" -150 Weld Ends Carbon Steel Double Disc Gate Valve with SMB-00 Limitorque Actuator	W03

Condition Reports

61565	65017	67902	67903	67904
67905	67906	102988	105347	108096
108783	109980	110048	110725	110865
111073	111174	111214	111640	111823
113911	113913	114437		

Work Orders

13-369794-000	13-370024-000	13-370025-000	13-370026-000	13-370027-000
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Work Orders

13-370028-000	13-374331-000	13-374332-000	13-374333-000	13-374334-000
13-374334-001	14-383026-005	14-383116-000	14-386746-000	14-386746-001
14-387945-000	16-420451-000	17-422333-000	17-422333-001	17-422333-002
17-422333-003	17-422333-004	17-422333-007	17-424714-000	17-424714-001
17-424714-002				

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
29672	NG004T 480 VAC Motor Control Center Inspection, Cleaning and Testing	May 17, 2017
APF 05-024-01	Minor Change Package (MCP): Installation of Ring Lug Connection - 015234	March 8, 2017
APF 05-024-01	Minor Change Package (MCP): Size 5 Motor Starter Spring Contact Base Spacers - 015267	May 1, 2017
BN-01	Maintenance Rule Final Scope Evaluation, Borated Refueling Water Storage System – BN01	
BN-02	Maintenance Rule Final Scope Evaluation, Borated Refueling Water Storage System – BN02	
BN-03	Maintenance Rule Final Scope Evaluation, Borated Refueling Water Storage System – BN03	
GN-01	Maintenance Rule Final Scope Evaluation, Containment Cooling System – GN-01	
GN-02	Maintenance Rule Final Scope Evaluation, Containment Cooling System – GN-02	
M-223A-00061	Instruction Manual for Gate & Check Valves	W19
M-223A-00061	Instruction Manual for Gate & Check Valves	W21
PIR 110725	Functional Failure Determination Checklist	March 9, 2017
QA-2017-0297	4 th Quarter Engineering Performance Report	Started October 1, 2016
QA-2017-0315	Review of Long Standing CRs in Operations to Determine if Escalation is Warranted	Started March 14, 2017
QA-2017-0319	Review of CR 111823 for Potential Elevation-Escalation	Started March 20, 2017
QA-2017-0322	Operations 1 st Quarter 2017 Quality Oversight Report	Started March 30, 2017

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
QA-2017-0330	Assessment of Clearance Order Boundary and Placement	Started April 10, 2017
QA-2017-0334	QA Assessment of Work Orders (WOs) 16-420570-000 and 12-352280-000 in Support of Audit 17-03-ENG	Started April 27, 2017
STS PE-007	Periodic Verification of MOV's (EGHV0058)	March 23, 2014
STS PE-007	Periodic Verification of MOV's (EGHV0059)	October 16, 2016
STS PE-007	Periodic Verification of MOV's (EGHV0060)	October 11, 2016
STS PE-007	Periodic Verification of MOV's (EGHV0127)	April 7, 2011
STS PE-007	Periodic Verification of MOV's (EGHV0130)	March 21, 2014
STS PE-007	Periodic Verification of MOV's (EGHV0131)	October 14, 2016
VTM E-018-00190 B-410916	Instructions for Replacement of Type E21MV3-M Vertical Interlock for Two Size 5 Contractors	0
VTM E-018-00190 PA1548	Cleaning Vertical Mechanical Interlock on Size	0

Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AP 26C-004	Operability Determination and Functionality Assessment	33
AP 26C-004	Operability Determination and Functionality Assessment	34
AP 26C-004	Operability Determination and Functionality Assessment	34A
AP 28-001	Operability Evaluations	24

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-12JE01	Piping & Instrumentation Diagram Emergency Fuel Oil System	19

Condition Reports

111624	111625	111808	112131	113699
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
APF 21-001-02	Night Shift Control Room Turnover Form	March 21, 2017
APF 28-001-01	Operability Evaluation	12
D-EG-A-005	EGHV0013	Printed March 23, 2017
D-EG-A-005A	EGHV0013	Printed March 20, 2017
D-EG-A-005B	EGHV0013	Printed March 23, 2017
LER 2017-001-00	Condition Prohibited by Technical Specifications Due to One Train of Component Cooling Water Inoperable	May 17, 2017
LER 2017-002-00	Tornado Missile Vulnerabilities Result in Condition Prohibited by Technical Specifications	May 31, 2017
PSA-05-0013	WCGS PRA Component Cooling Water System Notebook – 2002 Update	0

The following items are requested for the
Occupational Radiation Safety Inspection
Wolf Creek Generating Station
Inspection Dates: May 8–12, 2017

Integrated Inspection Report 2017002

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **April 17, 2017**.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1- A," applicable organization charts in file/folder "1- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Martin Phalen at (817) 200-1158 or martin.phalen@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

1. **Radiological Hazard Assessment and Exposure Controls (71124.01) and Performance Indicator Verification (71151)**

Date of Last Inspection: October 17 through 21, 2016

- A. List of contacts and telephone numbers for the Radiation Protection Organization staff and technicians
- B. Applicable organization charts
- C. ALL radiation protection related licensee (Wolf Creek) assessments and audits, all independent or third party radiation protection-related assessments and audits, all radiation protection-related self-assessments, and all radiation safety-related LERs, including, but not limited to, radiation monitoring instrumentation and radioactive effluents, releases and / or spills, written since September 1, 2016
- D. Procedure indexes for the radiation protection procedures
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. Radiation Protection Program Description
 - 2. Radiation Protection Conduct of Operations
 - 3. Personnel Dosimetry Program
 - 4. Posting of Radiological Areas
 - 5. High Radiation Area Controls
 - 6. RCA Access Controls and Radiation Worker Instructions
 - 7. Conduct of Radiological Surveys
 - 8. Radioactive Source Inventory and Control
 - 9. Declared Pregnant Worker Program
- F. List of corrective action documents (including corporate and sub-tiered systems) since September 1, 2016
 - a. Initiated by the radiation protection organization
 - b. Assigned to the radiation protection organization

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.

If not covered above, a summary of corrective action documents since September 1, 2016 involving unmonitored releases, unplanned releases, or releases in which any dose limit or administrative dose limit was exceeded (for Public Radiation Safety Performance Indicator verification in accordance with IP 71151)

Additionally, a copy of ALL radiation protection AND chemistry department root cause evaluations, apparent cause evaluation, and condition evaluations performed since September 1, 2016

- G. List of radiologically significant work activities scheduled to be conducted during the inspection period (If the inspection is scheduled during an outage, please

also include a list of work activities greater than 1 rem, scheduled during the outage with the dose estimate for the work activity.)

- H. List of active radiation work permits
- I. Radioactive source inventory list
 - a. All radioactive sources that are required to be leak tested
 - b. All radioactive sources that meet the 10 CFR Part 20, Appendix E, Category 2 and above threshold. Please indicate the radioisotope, initial and current activity (w/assay date), and storage location for each applicable source.
- J. The last two leak test results for the radioactive sources inventoried and required to be leak tested. If applicable, specifically provide a list of all radioactive source(s) that have failed its leak test within the last two years
- K. A current listing of any non-fuel items stored within your pools, and if available, their appropriate dose rates (Contact / @ 30cm)
- L. Computer printout of radiological controlled area entries greater than 100 millirem since the previous inspection to the current inspection entrance date. The printout should include the date of entry, some form of worker identification, the radiation work permit used by the worker, dose accrued by the worker, and the electronic dosimeter dose alarm set-point used during the entry (for Occupational Radiation Safety Performance Indicator verification in accordance with IP 71151).

3. **In-Plant Airborne Radioactivity Control and Mitigation (71124.03)**

Date of Last Inspection: March 9 through 13, 2015

- A. List of contacts and telephone numbers for the following areas:
 - 1. Respiratory Protection Program
 - 2. Self-contained breathing apparatus
- B. Applicable organization charts
- C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support (SCBA), and LERs, written since date of last inspection related to:
 - 1. Installed air filtration systems
 - 2. Self-contained breathing apparatuses
- D. Procedure index for:
 - 1. Use and operation of continuous air monitors
 - 2. Use and operation of temporary air filtration units
 - 3. Respiratory protection
- E. Please provide specific procedures related to the following areas noted below. Additional specific procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. Respiratory protection program
 - 2. Use of self-contained breathing apparatuses
 - 3. Air quality testing for SCBAs

4. Use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the airborne monitoring program, including:
1. Continuous air monitors
 2. Self-contained breathing apparatuses
 3. Respiratory protection program

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

- G. List of SCBA qualified personnel - reactor operators and emergency response personnel
- H. Inspection records for SCBAs staged in the plant for use since date of last inspection.
- I. SCBA training and qualification records for control room operators, shift supervisors, STAs, and OSC personnel for the last year.
- A selection of personnel may be asked to demonstrate proficiency in donning, doffing, and performance of functionality check for respiratory devices
- J. List of respirators (available for use) by type (APR, SCBA, PAPR, etc.), manufacturer, and model

**The following items are requested for the
Occupational Radiation Safety Inspection
at Wolf Creek
(June 12 thru 16, 2017)
Integrated Report 2017002**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before May 29, 2017.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1- A," applicable organization charts in file/folder "1- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Natasha Greene at (817) 200-1154 or natasha.greene@nrc.gov. The other inspector will be Shawn Money.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

2. Occupational ALARA Planning and Controls (71124.02)

Date of Last Inspection: October 17, 2016

- A. List of contacts and telephone numbers for ALARA program personnel
- B. Applicable organization charts
- C. Copies of audits, self-assessments, and LERs, written since date of last inspection, focusing on ALARA
- D. Procedure index for ALARA Program
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. ALARA Program
 - 2. ALARA Committee
 - 3. Radiation Work Permit Preparation
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the ALARA program. In addition to ALARA, the summary should also address Radiation Work Permit violations, Electronic Dosimeter Alarms, and RWP Dose Estimates

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.
- G. List of work activities greater than 1 rem, since date of last inspection, Include original dose estimate and actual dose.
- H. Site dose totals and 3-year rolling averages for the past 3 years (based on dose of record)
- I. Outline of source term reduction strategy
- J. If available, provide a copy of the ALARA outage report for the most recently completed outages for each unit
- K. Please provide your most recent Annual ALARA Report.

4. Occupational Dose Assessment (Inspection Procedure 71124.04)

Date of Last Inspection: June 22, 2015

- A. List of contacts and telephone numbers for the following areas:
 - 1. Dose Assessment personnel
- B. Applicable organization charts
- C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since date of last inspection, related to:
 - 1. Occupational Dose Assessment
- D. Procedure indexes for the following areas:
 - 1. Occupational Dose Assessment
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
 - 1. Radiation Protection Program
 - 2. Radiation Protection Conduct of Operations
 - 3. Personnel Dosimetry Program
 - 4. Radiological Posting and Warning Devices
 - 5. Air Sample Analysis
 - 6. Performance of High Exposure Work
 - 7. Declared Pregnant Worker
 - 8. Bioassay Program
- F. List of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, associated with:
 - 1. National Voluntary Laboratory Accreditation Program (NVLAP)
 - 2. Dosimetry (TLD/OSL, etc.) problems
 - 3. Electronic alarming dosimeters
 - 4. Bioassays or internally deposited radionuclides or internal dose
 - 5. Neutron dose

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.
- G. List of positive whole body counts since date of last inspection, names redacted if desired
- H. Part 61 analyses/scaling factors
- I. The most recent National Voluntary Laboratory Accreditation Program (NVLAP) accreditation report or, if dosimetry is provided by a vendor, the vendor’s most recent results