



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

August 11, 2016

Mr. Ken Peters, Senior Vice President
and Chief Nuclear Officer
Luminant Generation Company LLC
P.O. Box 1002
Glen Rose, TX 76043

**SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT – NRC INTEGRATED
INSPECTION REPORT 05000445/2016002 and 05000446/2016002**

Dear Mr. Peters:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Nuclear Power Plant, Units 1 and 2. On July 7, 2016, the NRC inspectors discussed the results of this inspection with Mr. Tom McCool, Site Vice President, and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. Further, inspectors documented two licensee-identified violations which were determined to be of very low safety significance in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of these NCVs, 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Comanche Peak Nuclear Power Plant, Units 1 and 2.

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 Regional Administrator, Region IV; and the NRC resident inspector at the Comanche Peak Nuclear Power Plant, Units 1 and 2.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's

K. Peters

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Sincerely,

/RA/

Jeremy R. Groom, Branch Chief
Project Branch A
Division of Reactor Projects

Docket Nos. 50-445 and 50-446
License Nos. NPF-87 and NPF-89

Enclosure:
Inspection Report 05000445/2016002 and
050446/2016002
w/ Attachment: Supplemental Information

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Sincerely,

/RA/

Jeremy R. Groom, Branch Chief
 Project Branch A
 Division of Reactor Projects

Docket Nos. 50-445 and 50-446
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Letter to Ken Peters from Jeremy Groom dated August 11, 2016

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT-NRC INTEGRATED
INSPECTION REPORT 05000445/2016002 and 05000446/2016002

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Electronic Distribution for Comanche Peak Nuclear Power Plant

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000445, 05000446

License: NPF-87, NPF-89

Report: 05000445/2016002 and 05000446/2016002

Licensee: Luminant Generation Company, LLC

Facility: Comanche Peak Nuclear Power Plant, Units 1 and 2

Location: 6322 N. FM-56, Glen Rose, Texas

Dates: April 1 through June 30, 2016

Inspectors: J. Josey, Senior Resident Inspector
S. Hedger, Acting Senior Resident Inspector
R. Kumana, Resident Inspector
W. Cullum, Reactor Inspector
J. Drake, Senior Reactor Inspector
P. Hernandez, Health Physicist
M. Phalen, Senior Health Physicist

Approved By: Jeremy R. Groom
Chief, Project Branch A
Division of Reactor Projects

Enclosure

SUMMARY

IR 05000445/2016002 and 05000446/2016002; 04/01/2016 – 06/30/2016; Comanche Peak NPP, Units 1 and 2; Surveillance Testing, Radiological Hazard Assessment and Exposure Controls

The inspection activities described in this report were performed between April 1, 2016, through June 30, 2016, by the resident inspectors at the Comanche Peak Nuclear Power Plant and inspectors from the NRC's Region IV office. Two findings of very low safety significance (Green) are documented in this report. All of these findings involved a violation of NRC requirements. Additionally, NRC inspectors documented in this report two licensee-identified violations of very low safety significance. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." 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."

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," associated with the licensee's failure to correct a condition adverse to quality in safety-related equipment. Specifically, following an in-service testing failure of auxiliary feedwater check valve 2FW-091 in November 2012, the licensee performed an operability evaluation of the auxiliary feedwater system. However, the inspectors identified that the licensee failed to take corrective action to address the condition adverse to quality that resulted in the valve failing to seat properly. Consequently, the same valve failed a subsequent inservice test in November 2015. Following discovery of this issue, the licensee performed an operability determination that established a reasonable expectation of operability pending implementation of corrective actions. The licensee entered this issue into corrective action program as CR-2015-10961.

The licensee's failure to correct a condition adverse to quality was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to correct auxiliary feedwater check valve 2FW-0191 failure to seat in November 2012 resulting in an additional failure in November 2015. Using Inspection Manual Chapter (IMC) 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, inspectors determined that this finding was of very low safety significance (Green) because the finding (1) was not a deficiency affecting the design and qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality, (2) did not represent a loss of system and/or function, (3) did not represent an actual loss of function of at least a single train for longer than its allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time, and (4) did 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 in accordance with the licensee's maintenance rule program. The finding has a problem identification and resolution cross-cutting aspect

associated with evaluation, in that, the licensee failed to thoroughly evaluate issues to ensure that resolutions address extent of conditions. Specifically, the licensee failed to appropriately classify the issue of the check valve not seating and recognize this as a degraded condition [P.2]. (Section 1R22)

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealed non-cited violation of Technical Specification 5.7.1.e associated with the licensee allowing a worker access into the 2-077-B penetration valve room, a high radiation area, without an adequate knowledge of the radiological conditions. Specifically, the licensee briefed the worker on the conditions with outdated radiation survey information even though the 2-077-B penetration valve room was subject to changing radiological conditions. As a result, an individual entered areas with general area dose rates of 210 mrem per hour rather than the briefed dose rates of less than 50 mrem per hour. This issue was entered into the licensee's corrective action program as Condition Report CR-2015-010211. Corrective actions included performing follow-up radiation surveys and implementing improvements to the high radiation area access control program.

The inspectors determined that allowing a worker access into a high radiation without an adequate knowledge of the radiological conditions was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it affected the program and process attribute of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, entry into a high radiation area without adequate knowledge of the radiological conditions placed the individual at risk for unnecessary exposure. The finding was assessed using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," issued August 19, 2008, and was determined to be of very low safety significance (Green) because the performance deficiency was not an ALARA planning issue, there was not an overexposure nor substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised. The finding has a human performance cross-cutting aspect associated with work management, because the organization failed to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority [H.5]. (Section 2RS1)

Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and associated corrective action tracking numbers are listed in Section 4OA7 of this report.

PLANT STATUS

Unit 1 began the inspection period at approximately 100 percent power. On April 26, 2016, the unit commenced coastdown to a planned refueling outage. The 1RF18 outage began with the normal reactor shutdown on May 1, 2016. The unit remained in an outage until May 31, 2016, when the generator breaker was closed and the unit synchronized to the grid. Unit 1 ramped to approximately 100 percent power on June 3, 2016, and operated at that power for the remainder of the inspection period.

Unit 2 began the inspection period at approximately 100 percent power and operated at that power level for the entire inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On April 21, 2016, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions involving heavy rains. The inspectors reviewed plant design features, the licensee's procedures to respond to Squaw Creek Reservoir level rising above 776 feet, and the licensee's implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

On April 26, 2016, the inspectors completed an additional inspection of the station's readiness for impending adverse weather conditions involving severe thunderstorms and high winds. The inspectors reviewed plant design features, the licensee's procedures to respond to severe thunderstorms, large hail, and tornados, 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 two samples of readiness for impending adverse weather conditions, as defined in Inspection Procedure 71111.01.

Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- March 29, 2016, Unit 1, atmospheric relief valves for steam generator 1-01, 1-02, and 1-03
- April 21, 2016, Unit 2, diesel generator 2-02 jacket water piping system

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 systems or trains were correctly aligned for the existing plant configuration.

These activities constituted two partial system walk-down samples 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 four plant areas important to safety:

- April 11, 2016, Unit 2, Fire area EM, cable spreading room
- April 12, 2016, Unit 1, Fire area EN, cable spreading room
- April 19, 2016, Units 1 and 2, Fire Zone ER150, Train A uninterruptible power supply HVAC room
- April 19, 2016, Unit 1 Fire area AA39, ventilation filter room

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 four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On June 27, 2016, the inspectors completed an inspection of the readiness and availability of risk-significant heat exchangers. The inspectors verified the licensee used the industry standard periodic maintenance method outlined in EPRI NP-7552 for the diesel generator 1-02 jacket water heat exchanger, and observed the licensee's inspection of the diesel generator 1-02 jacket water heat exchanger and the material condition of the heat exchanger internals. Additionally, the inspectors walked down the diesel generator 1-02 jacket water heat exchanger to observe its performance and material condition.

These activities constitute completion of one heat sink performance annual review sample, as defined in Inspection Procedure 71111.07.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

The activities described in Subsections 1 through 4 below constitute completion of one inservice inspection sample, as defined in Inspection Procedure 71111.08.

.1 Non-Destructive Examination Activities and Welding Activities

a. Inspection Scope

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Main Steam	TBX-2-2100-2B-W28	Ultrasonic Test
Main Steam	TBX-2-2100-2B-W31	Ultrasonic Test
Residual Heat Removal	TBX-1-4101-W5	Ultrasonic Test
Residual Heat Removal	TBX-1-4101-W6	Ultrasonic Test
Safety Injection	TBX-2-2533-H-6	Visual Examination
Safety Injection	TBX-2-2533-H-8	Visual Examination
Safety Injection	TBX-2-2533-H-9	Visual Examination
Safety Injection	TBX-2-2533-H-11	Visual Examination

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Containment Spray	TBX-2-1180-2-2WS	Penetrant Test
Containment Spray	TBX-2-1180-2-2-1	Penetrant Test
Containment Spray	TBX-2-1180-2-2-2	Penetrant Test
Containment Spray	TBX-2-1180-2-2-3	Penetrant Test
Containment Spray	TBX-2-1180-2-2-4	Penetrant Test
Reactor Coolant System	TBX-1-1300A-SUP	Visual Examination
Main Steam	TBX-2-2100-MR1	Visual Examination
Feedwater	TBX-2-2101-H7	Visual Examination
Service Water	SW-1-AB-010-H1	Visual Examination
Containment Spray	TBX-2-1180-2-2	Ultrasonic Test
Residual Heat Removal	TBX-2-2532-5	Ultrasonic Test
Residual Heat Removal	TBX-2-2532-34	Ultrasonic Test
Residual Heat Removal	TBX-2-2532-35	Ultrasonic Test
Residual Heat Removal	TBX-2-253236	Ultrasonic Test

During the review and observation of each examination, the inspectors observed whether activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspectors reviewed two indications that were previously examined and observed that the licensee evaluated and accepted the indications in accordance with the ASME Code. The inspectors also reviewed the qualifications of all nondestructive examination technicians performing the inspections and determined that they were current.

There were no welding activities performed while the inspector was on site.

The inspectors reviewed records for the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELDING TYPE</u>
Auxiliary Feedwater	AF-1-101-TUX4-1	Gas Tungsten Arc Welding
Auxiliary Feedwater	1AF-0274-TUX14	Gas Tungsten Arc Welding
Auxiliary Feedwater	1AF-0274-TUX15	Gas Tungsten Arc Welding

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELDING TYPE</u>
Auxiliary Feedwater	1AF-0274-TUX16	Gas Tungsten Arc Welding
Auxiliary Feedwater	1AF-0274-TUX18	Gas Tungsten Arc Welding
Auxiliary Feedwater	1AF-0274-TUX19	Gas Tungsten Arc Welding
Safety Injection	SI-1-008-TUX24-1	Gas Tungsten Arc Welding
Safety Injection	SI-1-008-TUX24-2	Gas Tungsten Arc Welding
Safety Injection	SI-1-008-TUX24-3	Gas Tungsten Arc Welding
Service Water	SW-1-387-TUX9	Gas Tungsten Arc Welding
Service Water	SW-1-387-TUX10	Gas Tungsten Arc Welding
Service Water	SW-1-387-TUX13	Gas Tungsten Arc Welding
Service Water	SW-1-387-TUX34	Gas Tungsten Arc Welding

The inspectors verified that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code Section IX requirements. The inspectors also determined that essential variables were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications.

b. Findings

No findings were identified.

.2 Reactor Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

The inspectors reviewed the results of the licensee's bare metal visual inspection of the reactor vessel upper head penetrations to determine whether the licensee identified any evidence of boric acid challenging the structural integrity of the reactor head components and attachments. The inspectors also verified that the required inspection coverage was achieved and limitations were properly recorded. The inspectors reviewed whether the personnel performing the inspection were certified examiners to their respective nondestructive examination method.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control Inspection Activities

a. Inspection Scope

The inspectors reviewed the licensee's implementation of its boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walk-down as specified in procedure STA-737, "Boric Acid Corrosion Detection and Evaluation," Revision 8. The inspectors reviewed whether the visual inspections emphasized locations where boric acid leaks could cause degradation of safety significant components, and whether engineering evaluation used corrosion rates applicable to the affected components and properly assessed the effects of corrosion induced wastage on structural or pressure boundary integrity. The inspectors observed whether corrective actions taken were consistent with the ASME Code and 10 CFR 50, Appendix B, requirements.

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

No inspection of the steam generators was performed this outage.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed 10 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. From this review the inspectors concluded that the licensee has an appropriate threshold for entering inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection operating experience. Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings were identified.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On April 4, 2016, the inspectors observed a portion of an annual simulator 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 constitute 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

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 or risk due to outage activities. The inspectors observed the operators' performance of the following activities:

- May 5, 2016, Unit 1, reactor cavity fill with one residual heat removal train
- May 25, 2016, Unit 1, reduced inventory operations
- May 30, 2016, Unit 1, reactor startup activities

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

These activities constitute 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)

a. Inspection Scope

The inspectors reviewed one instance of degraded performance or condition of safety-related structures, systems, and components (SSCs):

- June 30, 2016, Unit 2 safety injection system, high unavailability due to unplanned maintenance

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 four 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:

- March 8, 2016, Unit 1 and 2, elevated risk for adverse weather
- April 27, 2016, Unit 1, refueling outage 1RF18 defense in depth plan
- May 9, 2016, Unit 1, decay heat removal configuration during orange risk window
- June 22, 2016, Unit 1, barrier impairment for opening the Unit 1 service water tunnel door

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.

Additionally, on April 6, 2016, the inspectors also observed portions of an emergent work activity for diesel generator 2-02 that had the potential to affect the functional capability of a mitigating system.

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on SSCs.

These activities constitute completion of five 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 (71111.1)

a. Inspection Scope

The inspectors reviewed seven operability determinations and functionality assessments that the licensee performed for degraded or nonconforming SSCs:

- March 10, 2016, CR-2016-002284, operability determination of service water pump 2-02 with wetted termination box
- April 13, 2016, CR-2016-003303, operability determination of diesel generator 1-01 with hot web deflection results out of tolerance
- April 19, 2016, CR-2016-003516, functionality assessment of compensatory measures for main steam line 1-04 radiation monitor out of service
- May 1, 2016, CR-2016-003907, operability determination of reactor trip breakers following high trip response times
- May 26, 2016, CR-2016-005248, operability determination for turbine driven auxiliary feedwater pumps due to flash tank vents tornado missile susceptibility
- June 21, 2016, CR-2016-004865, operability determination of service water piping for Unit 1 and 2 rust indications
- June 22, 2016, CR-2016-004792, operability determination of source range channel N31

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

The inspectors reviewed operator actions taken or planned to compensate for degraded or nonconforming conditions. Specifically, the inspectors reviewed the actions of operators with the pressurizer power operated relief valves in manual following a failure of 1-PT-405, as documented in CR-2016-003740. The inspectors verified that the licensee effectively managed these operator workarounds to prevent adverse effects on the function of mitigating systems and to minimize their impact on the operators' ability to implement abnormal and emergency operating procedures.

These activities constitute completion of eight operability and functionality review samples, which included one operator work-around sample, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- April 7, 2016, spent fuel pool cooling pump X-02 following seal replacement
- April 7, 2016, diesel generator 2-02 following emergent maintenance
- May 28, 2016, steam generator blowdown high energy line break isolation valve following elastomer and packing replacement

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 constitute completion of three post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

During the station's refueling outage that concluded on May 31, 2016, the inspectors evaluated the licensee's outage activities. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan prior to the outage
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Observation and review of reduced-inventory and mid-loop activities
- Observation and review of fuel handling activities
- Monitoring of heat-up and startup activities

These activities constitute completion of one refueling outage sample as defined in Inspection Procedure 71111.20.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed five 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:

- June 13, 2016, Unit 2, steam generator split flow bypass check valve 2FW-0191

Containment isolation valve surveillance tests:

- May 16, 2016, Unit 1, steam generator 1-04 blowdown isolation valve

Other surveillance tests:

- May 17, 2016, Unit 2, reactor coolant system iodine activity
- April 27, 2016, Unit 1, diesel generator 1-02
- May 5, 2016, Unit 1, train B integrated test sequence

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 constitute completion of five surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," associated with the licensee's failure to correct a condition adverse to quality in safety related equipment. Specifically, following an in-service testing failure of auxiliary feedwater check valve 2FW-0191 in November 2012, the licensee performed an operability evaluation of the auxiliary feedwater system. However, the inspectors identified that the licensee failed to take corrective action to address the condition adverse to quality that resulted in the valve failing to seat properly. Consequently, the same valve failed a subsequent inservice test in November 2015.

Description. In November 2012, the licensee conducted in-service testing on auxiliary feedwater check valve 2FW-0191, a steam generator split flow bypass check valve. During the test, check valve 2FW-0191 failed to meet the site's acceptance criteria that allowed for a slight pressure increase following initiation of system flow as long as the pressure increase is less than or equal to 2 percent of the test gauge's full scale and

steady. During the test, upstream pressure did not remain steady and continued to rise for the duration of the test, indicating that the check valve did not seat. The licensee initiated Condition Report CR-2012-011563 to document the failed test. The licensee performed an operability evaluation for the auxiliary feedwater system but took no other actions to correct the issue associated with the failure of the valve to seat completely.

On November 11, 2015, the licensee conducted the same in-service testing on auxiliary feedwater check valve 2FW-0191. During this test, the licensee observed no differential pressure across check valve 2FW-0191 indicating the valve failed to seat. The licensee stopped the test and initiated Condition Report CR-2015-10961 to document the test failure. The licensee then mechanically agitated the check valve and performed the inservice test again. During the subsequent testing the licensee noted a differential pressure of 470 psid. The licensee documented an operability evaluation for the auxiliary feedwater system to demonstrate a reasonable expectation of operability with the check valve in a degraded condition.

The inspectors determined that the licensee failed to correct a condition adverse to quality. Specifically, inspectors concluded that the use of an operability determination in November 2012 justified continued operation with a degraded condition involving the failure of auxiliary feedwater check valve 2FW-0191 to seat. However, an operability determination is separate from corrective action to restore full qualification. Consequently, because the licensee only evaluated the operability of the auxiliary feedwater system but took no action to address the degraded condition, the same check valve failed a subsequent inservice test in November 2015. Additionally, the inspectors determined that mechanical agitation during the most recent refueling outage did not correct the degraded condition associated with check valve 2FW-0191, but instead it masked it. The inspectors informed the licensee of their concerns, the licensee initiated Condition Report CR-2015-11013, and revised their operability determination documented in CR-2015-10961 to address these concerns.

Analysis. The licensee's failure to correct a condition adverse to quality was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to correct auxiliary feedwater check valve 2FW-0191 failure to seat in November 2012 resulting in an additional failure in November 2015. Using Inspection Manual Chapter (IMC) 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, inspectors determined that this finding was of very low safety significance (Green) because the finding (1) was not a deficiency affecting the design and qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality, (2) did not represent a loss of system and/or function, (3) did not represent an actual loss of function of at least a single train for longer than its allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time, and (4) did 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 in accordance with the licensee's maintenance rule program. The finding has a problem identification and resolution cross-cutting aspect associated with evaluation, in that, the licensee failed to thoroughly evaluate issues to ensure that resolutions address extent of conditions. Specifically, the

licensee failed to appropriately classify the issue of the check valve not seating and recognize this as a degraded condition [P.2].

Enforcement. Title 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, prior to November 11, 2015, for quality related components associated with the auxiliary feedwater system, to which 10 CFR Part 50, Appendix B applies, the licensee failed to assure that conditions adverse to quality were promptly identified and corrected. Specifically, when a failure occurred during inservice testing of auxiliary feedwater check valves 2FW-0191 in November 2012, the licensee performed an operability evaluation of the auxiliary feedwater system and mechanically agitated the valve, but took no actions to identify and correct the degraded condition associated with the valve. In response to this issue, the licensee also performed an operability determination which established a reasonable expectation of operability pending implementation of corrective actions. This violation is being treated as an NCV, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee's corrective action program as Condition Report CR-2015-11013. NCV 05000446/2016002-01, "Failure to Correct Conditions Adverse to Quality"

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on April 13, 2016, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the EOF, TSC, OSC, and simulator, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constitute completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06.

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. The inspectors walked down various portions of the plant and performed independent radiation dose rate measurements. The inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors reviewed licensee performance in the following areas:

- Radiological hazard assessment, including a review of the plant's radiological source term 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 labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions.
- 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, and 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 for areas of the plan 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 the significant radiological conditions in their workplace, radiation work permit controls/limits in place, and were aware of their electronic alarming 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

Introduction: The inspectors reviewed a Green, self-revealed, non-cited violation of Technical Specification 5.7.1.e associated with the licensee allowing a worker access into a high radiation area without an adequate knowledge of the radiological conditions. Specifically, the licensee briefed the worker on the conditions with outdated radiation survey information even though the 2-077-B penetration valve room was subject to changing radiological conditions. As a result, an individual entered areas with higher than expected dose rates.

Description: On October 25, 2015, an individual received a high radiation area brief to enter the 2-077-B penetration valve room, which was posted as a high radiation area. The radiation survey used to brief the individual to the expected radiological conditions was conducted on October 5, 2015, and indicated that the general area dose rates did not exceed approximately 50 millirem per hour. While performing residual heat removal (RHR) system venting in the valve room, the individual received a dose-rate alarm on his electronic dosimeter (ED). The individual left the area and notified radiation protection of the ED alarm. Follow-up radiation surveys by the licensee documented general area dose rates of approximately 210 millirem per hour.

Plant procedures allow the use of previously performed surveys to brief high radiation area entries, assuming there has been no movement or concentration of radioactive material or changes in plant conditions that could affect radiological conditions in the area. However, the 2-077-B penetration valve room contained RHR equipment that continuously cycled processed radioactive water. Additionally, the plant was in a refueling outage which affects radioactive material concentrations in the water running through the RHR system. The inspectors concluded that the radiological hazards present in the room were subject to change during RHR system operation and should have been evaluated consistent with that potential.

Analysis: The inspectors determined that allowing worker access into a high radiation area (the 2-077-B penetration valve room) without an adequate knowledge of the radiological conditions was a performance deficiency. The inspectors determined that the performance deficiency was more than minor, and therefore a finding, because it affected the program and process attribute of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, because the licensee briefed the worker on the radiological conditions with outdated radiation survey information, the individual entered areas with higher than expected dose rates.

The finding was assessed using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," issued August 19,

2008, and was determined to be of very low safety significance (Green) because the performance deficiency was not an ALARA planning issue, there was not an overexposure nor substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised.

The performance deficiency has a human performance cross-cutting aspect associated with work management, because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority. Specifically, the work process failed to identify and manage the radiological risk associated with an area of the plant that was known to be subject to changing radiological conditions based on equipment operations [H.5].

Enforcement: Technical Specification 5.7.1.e requires, in part, that entry into high radiation areas be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. Contrary to the above, on October 25, 2015, an entry into a high radiation area was made before dose rates in the area had been determined and personnel were not knowledgeable of them. Specifically, the licensee briefed the worker on the conditions with outdated radiation survey information even though the 2-077-B penetration valve room was subject to changing radiological conditions. Since this violation was of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-2015-010211, this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy. Corrective actions included performing follow-up radiation surveys and implementing improvements to the high radiation area access control program. NCV 0500445/2016002-03; 05000446/2016002-02, "Failure to Determine Dose Rates Prior to Allowing Entry into a High Radiation Area"

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 during the refueling outage, in order to directly observe the licensee's ALARA process activities including planning, implementation of radiological work controls, execution of work activities, and ALARA review of work-in-progress. 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. Specific work plans reviewed included the 1RF18 Reactor Coolant Pump Motor Swap and Pressurizer Work Activities.

- Implementation of ALARA and radiological work controls including a review of the planned radiological administrative, operational, and engineering controls, compared to results achieved in the field.
- Radiation worker performance including radiation protection technician performance during work activities performed in radiation areas, airborne radioactivity areas, or high radiation areas.

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

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 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of April 1, 2015 through March 31, 2016, the inspectors reviewed licensee event reports (LERs), maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of the safety system functional failures performance indicator for units 1 and 2 as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 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, 2015 through March 31, 2016 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 May 17, 2016. 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 units 1 and 2 as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Reactor Coolant System Total Leakage (BI02)

a. Inspection Scope

The inspectors reviewed the licensee’s records of reactor coolant system total leakage for the period of April 1, 2015 through March 31, 2016 to verify the accuracy and completeness of the reported data. The inspectors observed the performance of reactor coolant system leakage determination on February 19, 2016. 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 for units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.4 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, 2015, to March 31, 2016. The inspectors reviewed a sample of radiologically controlled area exit transactions 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.

.5 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 or gaseous effluent releases that occurred between October 1, 2015, and March 31, 2016, and were reported to the NRC to verify the performance indicator data. 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 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected one issue for an in-depth follow-up:

- On November 9, 2015, during performance of protection channel time response testing on unit 1, a personnel error resulted in multiple alarms in the control, several instruments failing, and an unplanned reactivity change of approximately 1.5 percent power. The licensee identified that the maintenance personnel had used the incorrect test equipment because they did not recognize that a change

to the procedure had been implemented that required a different test configuration.

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

These activities constitute completion of one annual follow-up sample as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

.3 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused on the safety-related calculation change backlog. The inspectors reviewed documents and interviewed personnel to determine if the licensee completely and accurately identified problems in a timely manner commensurate with its significance, evaluated and dispositioned operability issues, considered the extent of condition, prioritized the problem commensurate with its safety significance, identified appropriate corrective actions, and completed corrective actions in a timely manner commensurate with the safety significance of the issue.

These activities constitute completion of one semi-annual trend review inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

40A5 Other Activities

a. Inspection Scope

The inspectors evaluated the impact of financial conditions on continued safe performance at Comanche Peak. In that the licensee's parent company, Energy Future Holdings, was under bankruptcy protection/reorganization during the inspection period, NRC Region IV conducted special reviews of processes at Comanche Peak. The inspectors evaluated several aspects of the licensee's operations to determine whether the financial condition of the station impacted plant safety. The factors reviewed included: (1) impact on staffing, (2) corrective maintenance backlog, (3) changes to the planned maintenance schedule, (4) corrective action program implementation, and (5) reduction in outage scope, including risk-significant modifications. In particular, the inspectors verified that licensee personnel continued to identify problems at an appropriate threshold and enter these problems into the corrective action program for

resolution. The inspectors also verified that the licensee continued to develop and implement corrective actions commensurate with the significance of the problems identified.

The special review of processes at Comanche Peak included continuous reviews by the Resident Inspectors, as well as the specialist-led baseline inspections completed during the inspection period which are documented previously in this report.

b. Findings

No findings were identified.

40A6 Meetings, Including Exit

Exit Meeting Summary

On May 12, 2016, the inspectors presented the inspection results to Mr. J. Taylor, Director, Site Engineering, 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 May 13, 2016, the inspectors presented the radiation safety inspection results to Mr. J. Dreyfuss, 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 7, 2016, the resident inspectors presented the inspection results to Mr. T. McCool, 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.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as non-cited violations.

- Comanche Peak Unit 1, Operating License NPF-87, Condition 2.G, "Fire Protection," requires, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment 78 and as approved in the Safety Evaluation Report and its supplements through Supplement 24.

Comanche Peak Unit 2, Operating License NPF-89, Condition 2.G, "Fire Protection," requires, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment 87 and as approved in the Safety Evaluation Report and its supplements through Supplement 27.

The station's approved fire protection program includes Fire Protection Report, Revision 29, Section 5.3.8, "Fire Area EO – Control Room," includes Deviation 3c-1, "Control

Room Missile Door,” which requires, in part, that since the control room missile door in the west wall is not a three hour rated fire door, the area of the turbine deck within 100 feet of the door is to be void of combustibles. Contrary to the above, on May 5, 2016, the licensee stored combustible materials within 100 feet of the control room missile door in the west wall. Specifically, licensee personnel identified that contractors had stored combustibles within the combustible free zone, and that no compensatory measures had been implemented for the deviation from the Fire Protection Report. The licensee implemented a periodic roving fire watch to compensate for the reduction in fire protection. The violation is more than minor because if left uncorrected, it could lead to a more significant safety concern. Using Inspection Manual Chapter 0609, Attachment 04, “Initial Characterization of Findings,” and Inspection Manual Chapter 0609, Appendix F, “Fire Protection Significance Determination Process,” the inspector determined that the violation is of very low safety significance (Green) because the finding did not affect the ability of either unit to achieve safe shutdown. The violation was entered into the licensee’s corrective action program as CR-2016-004167.

- Technical Specification 5.4.1.a states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a., identifies procedures for maintenance as required procedures. Work order 4831032 is a procedure established by the licensee for performing maintenance on diesel generator 2-02. The work order provided instructions for installation of the magnetic speed pickup sensor cable. Contrary to the above, from October 1996 through March 2, 2016, the licensee failed to install the unit 2 diesel generator 2-02 magnetic speed pickup sensor cable in accordance with the approved instructions. Specifically, the speed sensor cable conduit was not fully threaded onto the cable plug. This inadequate installation was present until 2016, when the conduit threaded connection was physically impacted at an undetermined time. The impact caused the conduit connection to break and the conduit to separate from the plug, leaving the cable leads exposed but intact. A licensee technician identified the broken connection during a system walk down on March 2, 2016. The licensee declared the diesel generator inoperable and restored the cable to its design configuration. The licensee analyzed the apparent thread engagement, and determined that, prior to the break in the conduit connection, the cable would have maintained its function in a seismic event, but after the break, the cable function could not be assured. The licensee determined that a failure of the cable would result in the diesel generator exceeding its allowed frequency, but would not result in a diesel generator failure to run. Because the time that the break occurred could not be determined, the diesel generator was assumed to be inoperable at the time of discovery. The violation is more than minor because it affected the configuration control attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Attachment 04, “Initial Characterization of Findings,” and Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” the inspector determined that the violation is of very low safety significance (Green) because the finding did not represent a loss of system or function, and did not represent a loss of function of a single train for greater than its technical specification allowed outage time. The violation was entered into the licensee’s corrective action program as CR-2016-001941.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

G. Struble, Operations/Simulator Training Manager
J. Alldredge, Technician, Radiation Protection
T. Curtis, Lead Environmental Technician
S. Darter, Coordinator, Radiation Protection
S. Dixon, Consulting Licensing Analyst/Regulatory Affairs
T. Emery, REMP Environmental Technician
T. Hope, Manager, Regulatory Affairs
B. Knapp, Acting Manager, Radiation Protection
M. Macho, Supervisor, Radiation Protection
S. Peterson, Senior Calibration Laboratory Technician, Radiation Protection
K. Powell, Supervisor, Radiation Protection
M. Syed, Engineer, Systems Engineer
M. Watkins, Lead Technician, Instruments and Controls Maintenance
J. Barnette, Consultant, Licensing Technologist
S. Bartholomew, Emergency Preparedness Analyst
G. Bryan, Emergency Preparedness Operations Specialist
K. Faver, Emergency Preparedness Planner
R. Fishencord, Emergency Preparedness Planner
J. Hull, Manager, Emergency Preparedness
R. Marquez, Emergency Preparedness Planner
S. Sewell, Director, Organization Effectiveness
D. Volkening, Manager, Nuclear Oversight
T. McCool, Site Vice President
B. Knowles, Radiation Protection Staff

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000446/2016002-01	NCV	Failure to Correct Conditions Adverse to Quality (Section 1R22)
05000445, 05000446/2016002-02	NCV	Failure to Determine Dose Rates Prior to Allowing Entry into a High Radiation Area (Section 2RS1)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CS-CA-0000-4062	PMP and PMF evaluations for NRC Generic Letter 89-22 and GI 103	0

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-907	Acts of Nature	15
ODA-407	Operations Department Procedure Use and Adherence	16

Section 1R04: Equipment Alignment

Condition Reports

CR-2016-002776 CR-2016-001383

Section 1R05: Fire Protection

Condition Reports

CR-2016-003529

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M1-0225-02	Flow Diagram Auxiliary Building Fire Protection	CP-23

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FPI-409	Auxiliary Bldg. Chiller and Train B Primary Plan Exhaust Filter Rooms Elev. 873'6"	4

Section 1R07: Heat Sink Performance

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MEB-391	Minimum Allowable Service Water Flow to Diesel Generators	5

Condition Reports

CR-2016-003957

Section 1R08: Inservice Inspection Activities

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EPG-745	CPNPP Welding Program	1
WLD-106	ASME General Welding Requirements	3
WLD-103	Welder Performance Qualifications	6
WLD-102	Preparation And Qualification of Welding Procedure Specifications	7
TX-ISI-8	VT-1 and VT-3 Visual Examination Procedure	8
TX-ISI-11	Liquid Penetrant Examination for Comanche Peak Nuclear Power Plant	11
TX-ISI-88	Underwater Remote Visual Examination of Reactor Vessel and Internals	4
TX-ISI-210	Ultrasonic Examination Procedure for Welds in Ferritic Steel Vessels	8
TX-ISI-212	Ultrasonic Examination Procedure of Nozzle Inner Radius Sections for Comanche Peak Nuclear Power Plant	9
TX-ISI-214	Ultrasonic Examination for Welds in Piping and Vessels	7
TX-ISI-301	Ultrasonic Examination Procedure of Ferritic Piping Welds	5
TX-ISI-302	Ultrasonic Examination Procedure of Austenitic Piping Welds	5
TX-ISI-IWE	Metal Containment Visual Examination	5
STI-604.04	Outage Safety Function Guide	2
STA-626	Chemical/Consumable Control Program	11
STA-705	Radioactive Systems Leakage Inspection Program	6

Condition Reports (CRs)

CR-2014-011035 CR-2014-011071 CR-2014-011402 CR-2014-011875 CR-2014-011726
CR-2014-011871 CR-2015-00601 CR-2015-006497 CR-2015-011378 CR-2016-002453

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
LO44.BBS.015	RCS System, Simulator Exercise Guide	February 17, 2016

Section 1R12: Maintenance Effectiveness

Condition Reports

CR-2015-011028

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RXE-TA-CPX/0-101	Cycle-Independent RCS Time to Boil Analysis	0

Condition Reports

CR-2016-004274 CR-2016-004165 CR-2016-002531 CR-2016-001306 CR-2014-006997
CR-2016-000377

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STI 604.02	Maintenance Risk Assessment	1
STA-604	Configuration Risk Management and Work Scheduling	10
ABN-907	Acts of Nature	15
STI-604.04	Outage Safety Function Guide	2

Section 1R15: Operability Determinations and Functionality Assessments

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NUS-176	Unit 1 Main Steam Line Monitor Setpoints 1-RE-2325, 1-RE-2326, 1-RE-2327, 1-RE-2328	2

Condition Reports

CR-2016-003516 CR-2016-003907 CR-2016-004010 CR-2016-002284 CR-2016-002244
CR-2016-003095

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
Work Order 5264088	CR-2016-003740 Troubleshoot Loop 1-P-0405	April 27, 2016
Work Order 4923527	Record Hot Web Deflections	April 11, 2016
LCOAR Number A1-16-0244	INC-7758A, CCAL RCS Over Pressurization Protection, Performed Under Work Order: 4931834	April 27, 2016

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
INC-7758A	Channel Operational Test, and Channel Calibration, Reactor Coolant System Cold Overpressurization Protection (LTOP) Channel TX-0413	8
ABN-705	Pressurizer Pressure Malfunction	13
ECA-0.0A	Loss of All AC Power	9
ECA-0.1A	Loss of All AC Power Recovery Without SI Required	9
ECA-0.2A	Loss of All AC Power Recovery With SI Required	9
ECA-2.1A	Uncontrolled Depressurization of All Steam Generators	9
EOP-1.0A	Loss of Reactor or Secondary Coolant	9
EOP-2.0A	Faulted Steam Generator Isolation	9
EOP-3.0A	Steam Generator Tube Rupture	9
EOS-0.4A	Natural Circulation Cooldown with Steam Void in Vessel (Without RVLIS)	9
FRI-0.1A	Response to High Pressurizer Level	9
FRP-0.1A	Response to Imminent Pressurized Thermal Shock	9
FRP-0.2A	Response to Anticipated Pressurized Thermal Shock Condition	9
FRS-0.1A	Response to Nuclear Power Generation/ATWT	9
MSM-P0-3343	Emergency Diesel Engine Crankshaft Deflection and Thrust Measurements	2

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
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Work Orders

5261360

Section 1R19: Post-Maintenance Testing

Condition Reports

CR-2016-005590

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OPT-214B	Diesel Generator Operability Test	16

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EV-CR-2016-003095	Keep Warm Pump Mechanical Seal Common Cause	April 7, 2016
Work Order 5251719	CR-2016-003095 Replace/Rework Mechanical Seal	April 6, 2016
LCOAR Number: A2-16-0184	OPT-214B, Train B Diesel Generator 2-02 Operability Test (Slow Start) Performed Under Work Order: 4819230	April 8, 2016
LCOAR Number A2-16-0183	Mechanical Seal Leakage on 2-02 EDG Keep Warm Pump	April 7, 2016
Work Order 5239005	OPT-214B, (Slow Start) Train B Diesel Generator 2-02 Operability Test	April 6, 2016

Work Orders

5220142 4941908

Section 1R20: Refueling and Other Outage Activities

Condition Reports

CR-2016-004660 CR-2016-004736 CR-2016-003912

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
STA-615	Fatigue Management and Staff Work Hours	11
RFO-102	Refueling Operation	13
MDA-304	Control of Heavy Loads and Critical Lifts	7
OPT-407	RCS Temperature and Pressure Verification	8
IPO-010A	Reactor Coolant System Reduced Inventory Operations	18
MSM-C1-9901	Reactor Vessel Head Removal and Installation (Unit 1)	5

Section 1R22: Surveillance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OPT-435A	Train B Diesel Generator Integrated Test Sequence	7
OPT-504A	SG 1-04 Blowdown & Sample Valve Operability and PIT	13
CHM-120	Primary Chemistry	15
OPT-214A	Diesel Generator Operability Test	22

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
Work Order 5189429	OPT-214A, (Fast Start) DG 1-02 OPE Test	April 28, 2016

Work Orders

4259089 4934906 4713633

Section 1EP6: Drill Evaluation

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
--	Emergency Preparedness Red Team Exercise April 13, 2016 Final Report	6/2/16

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MDA-316	Control of Load Handling	02
RPI-212	Radioactive Source Control	13
RPI-600	Field Implementation and Use of Remote Monitoring	04
RPI-602	Radiological Surveillance and Posting	56 and 57
RPI-611	Radiological Controls for Diving Operations	08
RPI-620	Crud Burst Trending and Radiological Transients	15 and 16
RPI-625	RP Job Coverage for High Integrity Container Closure and Transfer	03
RPI-660	Control of High Radiation Areas	15 and 16
RPI-700	Sealed Source Leak Testing	12
SOP-102A	Residual Heat Removal System	19 and 20
STA-422	Processing Condition Reports	33
STA-609	Reactor Coolant Water Chemistry Control Program	11
STA-637	Barricades and Barriers	03
STA-650	General Health Physics Plan	07
STA-655	Exposure Monitoring Program	21
STA-660	Control of High Radiation Areas	16

Condition Reports (CRs)

2015-009345	2015-010432	2015-010442	2016-002617	2016-003921
2015-010587	2015-010211	2015-007403	2015-010587	2016-004468
2016-000253				

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
20150608	Radiation Work Permit Fuel Transfer Canal Work and Associated Activities	00
20152101	Radiation Work Permit 2RF15 Operations Activities	02
HP7C0003	Sealed Source Leak Test	February 17, 2016
HP7C0003	Sealed Source Leak Test	June 18, 2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
	Selected Radiological Surveys of U2 SG 810 Pipe Pen Area Train B 2-0077A	Various Dates 2015
	Selected Radiological Surveys of U1 and U2 Containment	Various Dates 2015 and 2016
	1RF18 High Radiation Area Controls Plan	March 31, 2016

Section 2RS2: Occupational ALARA Planning and Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RPI-402	Personnel Decontamination	29
RPI-528	Multiple Dosimetry Badging	13
RPI-606	Radiation Work and General Access Permits	35
RPI-608	Control of Shielding	14
RPI-613	Discrete Radioactive Particle Contamination Control	07
RPI-622	Containment Refueling Job Coverage	18
RPI-623	Radiological Briefings	10
STA-651	ALARA Program	12
STA-652	Radioactive Material Control	19
STA-657	ALARA Job Planning/Debriefing	19

Condition Reports (CRs)

2015-011179	2015-010512	2015-009117	2015-008658	2015-008318
2015-008157	2015-007961	2015-005657	2015-005656	2015-004594
2016-003009	2016-002023	2016-003699		

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
20160211	System Breach for XWP Valves	March 10, 2016
20160213	Troubleshoot/Manipulate Incores/Adjust Clutch Unit 2/Decon Boxes and Cut Cable if Required	00

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
20160502	Vault 16 HIC Change-Out in 810' Fuel Building Truck Bay	00
20160504	SFP X-02 and CVCS MB 1-02 Resin Transfer to HIC in Train Bay	00
20160509	CVCS CAT BED 1-01 Resin Transfer to HIC in Barrel Pit X-247'	00
20161405	1RF18 RCP Motor 1-01 Swap	02
20161201	Pressurizer (Rm 1-161C/D/E) Work Activities	00
20161217	1RF18 Insulator Activities All Areas	01
20161401	1RF18 RCP Activities	01
20161602	1RF18 Fuel Building Refueling Activities	00

Audits, Self-Assessments, and Surveillances

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
EVAL-2015-002	CPNPP Nuclear Oversight Evaluation Plan	April 14, 2015
CR-2015-001448	RP Area for Improvement Effectiveness Review	June 4, 2015
EVAL-2015-007	CPNPP Nuclear Oversight Evaluation Report	October 16, 2015
CR-2015-009947	Targeted Self-Assessment to Measure CPNPP High Radiation Area Controls to USA High Radiation Control Guideline	November 12, 2015

Miscellaneous Documents

<u>Title</u>	<u>Date</u>
Five Year Dose Reduction Plan	2016-2021
2RF15 CPNPP Radiation Protection Outage ALARA Report	March 24, 2016

Section 40A2: Problem Identification and Resolution

Condition Reports

2015-010893

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
8810D32-03	Channel Test Switch Logic Protection II Cabinet 02 Interconnection Wiring Diagram Unit 1	CP-4

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
INC-7560A	Sensor Response Time test T-Cold RTD, CH 0420B and 0421B	4

Work Orders

4770766