



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Comanche Peak 2 > Quarterly Plant Inspection Findings

Comanche Peak 2 – Quarterly Plant Inspection Findings

3Q/2017 – Plant Inspection Findings

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

Initiating Events

Mitigating Systems

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Control Transient Combustible Material in Accordance with a Fire Protection Procedure

The inspectors identified a non-cited violation of Operating Licenses NPF-87 and NPF-89, License Condition 2.G, "Fire Protection Program," for the failure to control transient combustibles in accordance with the station's fire protection report. Specifically, 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 3-hour rated fire door, the area of the turbine deck within 100 feet of the door is to be void of combustibles. Contrary to this, the licensee allowed storage of combustible materials in this area without required compensatory measures. This issue does not represent an immediate safety concern because the licensee removed the combustible materials upon identification. The licensee entered this issue into corrective action program as Condition Report CR-2017-5564.

The failure to control transient combustible material in accordance with the approved fire protection report is a performance deficiency. The performance deficiency was more than minor and therefore a finding because it was associated with the protection against external factors attribute of the Mitigating System 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. Specifically, the introduction of transient combustible materials decreased the external event mitigation for fire prevention. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," June 19, 2012, the inspectors determined that the finding pertained to a failure to adequately implement fire prevention and administrative controls for transient combustible materials. As a result, the inspectors were directed to Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," September 20, 2013. The inspectors evaluated the finding through Appendix F, Attachment 1, "Fire

Protection Significance Determination Process Worksheet," September 20, 2013, and determined that the finding was of very low safety consequence (Green) because the Fire Prevention and Administrative Controls finding would not prevent the reactor from reaching and maintaining a safe shutdown condition. The finding has a problem identification and resolution cross-cutting aspect associated with resolution, in that, the licensee failed to take effective corrective actions to address issues in a timely manner. Specifically, the licensee had previously identified this issue in Condition Report CR-2014-10224 but had failed to take corrective actions to address it.

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Operability Evaluation for Safety-Related Pipe Supports

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," that occurred when the licensee failed on two occasions to perform an adequate operability determination associated with multiple safety-related pipe supports. Specifically, the operability determination of multiple carbon steel pipe support clamps exposed to boric acid and a bent sway strut pipe restraint lacked the engineering rigor necessary to provide a high degree of confidence to support the operability of the components. Subsequently, the inspectors concluded that the licensee established reasonable expectation for operability once engineering provided the control room with further analysis on the degraded conditions, and the new information was reviewed and accepted. This issue was entered into the licensee's corrective action program as Condition Report CR-2017-05418.

The licensee's failure to perform adequate operability determinations per plant procedures 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 System cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee: (1) failed to perform the required corrosion evaluation for a comparison of material wastage against design dimensions of the pipe support clamps; (2) failed to perform a visual inspection of the material condition of the pipe support clamps as required by the work order; (3) used non-seismic design tolerances for the qualification of a seismically qualified strut in the immediate operability determination; and (4) failed to consider that the bent condition of the strut occurred after the previously accepted visual examinations on the same pipe support. All these issues could have resulted in safety-related components failing to perform their specified safety function during accident conditions. Using Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," dated October 7, 2016, and Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding was of very low safety significance (Green) because the finding: (1) it was not a design deficiency; (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 technical specification allowed outage time; (4) and did not result in the loss of a high safety-significant non-technical specification train. This finding had a cross-cutting aspect in the area of problem identification and resolution associated with resolution because the licensee failed to adequately assess the degraded condition of the pipe supports in a complete and accurate manner to support a reasonable expectation of operability.

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Relays Not Environmentally Qualified

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control,"

associated with the licensee's failure to assure that design changes were subject to design control measures commensurate with those applied to the original design. Specifically, the licensee changed internal components for safety-related, steam generator atmospheric relief valve booster relays but failed to verify that these new components could withstand the environment created during a high energy line break. This issue does not represent an immediate safety concern because the licensee performed an operability determination which established a reasonable expectation for operability, and implemented corrective actions to replace the relays with qualified relays. The licensee entered this issue into the corrective action program for resolution as Condition Report CR-2017-006236.

The failure to ensure that changes to the facility were subject to design control measures commensurate with those applied to the original design 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 associated objective to ensure 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," dated October 7, 2016, and Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the 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) 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 in accordance with the licensee's maintenance rule program. The inspectors did not assign a cross-cutting aspect because the performance deficiency was not reflective of present performance.

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Translate Design Requirements Into the As Built Facility

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to assure that applicable regulatory requirements and the design bases, as defined in 10 CFR 50.2 and as specified in the license application, for those structure, systems and components to which this appendix applies, were correctly translated into specifications, drawings, procedures, and instructions. Specifically, from initial construction through March 2017, the licensee failed to fully incorporate applicable moderate energy line break design requirements for fire protection piping located in the vicinity of the station service water pumps, the latter which are needed to ensure the capability to shut down the reactor and maintain it in a safe shutdown condition following a moderate energy line break. This issue does not represent an immediate safety concern because when the lines were identified the licensee took prompt action to isolate and depressurize them, and the licensee has implemented plant modifications. The licensee entered this issue into the corrective action program as Condition Report CR-2016-008147.

The failure to incorporate applicable design requirements into specifications for moderate energy line break protection was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, from initial construction through March 2017, the licensee failed to fully incorporate applicable design requirements for components needed to ensure the capability to shut down the reactor and maintain it in a safe shutdown condition following a moderate energy line break. Using Inspection Manual Chapter

0609, Attachment 04, "Initial Characterization of Findings," dated July 1, 2012, and Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated October 7, 2016, the inspectors determined the finding required a detailed risk evaluation because the finding involved a deficiency affecting the design and qualification of a mitigating structure, system, or component, and resulted in a loss of operability, and represented an actual loss of function of at least a single train for longer than its allowed outage time. A senior reactor analysts from Region IV performed a detailed risk evaluation and determined that the bounding increase in core damage frequency for this issue was 5.1E-8/year for Unit 1 and 2.9E-10/year for Unit 2, and was therefore of very low safety significance (Green). The inspectors did not assign a cross-cutting aspect because the performance deficiency was not reflective of present performance.

Inspection Report# : 2017002 (*pdf*)

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Implement and Maintain Adequate Inspection Procedures for Penetration Sealing Devices

Green. The team identified a non-cited violation of Operating License Condition 2.G related to the licensee's failure to maintain adequate procedures for the inspection of required penetration sealing devices as required by the licensee's Fire Protection Report, Section IV-2.1.c.1. Specifically, the Fire Protection Report required, in part, that required fire rated assemblies and penetration sealing devices be confirmed operable by visually inspecting the exposed surfaces using a site approved sampling plan every 18 months. Fire Protection Manual Procedure FIR-310, "Penetration Seal Inspection," Revision 3, did not appropriately capture all penetration sealing devices for inspection. In 2009, guidance was added to the procedure restricting inspections to equipment accessible from the floor (8 feet or below). Also, the licensee's automated random sampling process did not ensure that all penetration seals would be inspected within the licensee's 15-year sampling plan interval. The licensee entered this issue into their corrective action program as Condition Reports CR-2017-007745 and CR-2017-007746 to revise the surveillance procedure and sampling plan to ensure all required penetration seals were included and inspected within the 15-year sampling plan interval.

The failure to ensure that fire protection program procedures used to establish inspection criteria for penetration sealing devices appropriately captured all required penetration sealing devices for visual inspection using a site approved sampling plan every 18 months was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e., fire), and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated October 7, 2016, the finding was determined to require additional evaluation under Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 30, 2013. The finding was screened as a Green finding of very low safety significance in accordance with Task 1.4.3, "Fire Confinement," Question B. Based on the analysis performed, the team concluded that the degradation of the fire barrier penetration seals represented a low degradation of the fire confinement element. No inspected barriers were identified as degraded, and all inspected barriers provided at least a 1-hour or greater fire endurance rating. The team did not assign a cross-cutting aspect because the performance deficiency was not reflective of present performance in that the inspection procedure changes occurred in 2009. (Section 1R05.2.b)

Inspection Report# : 2017008 (*pdf*)

Significance: G Mar 27, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Maintain B.5.b Equipment in a State of Readiness to Support Mitigation Strategies

The inspectors identified a non-cited violation of 10 CFR 50.54(hh)(2), "Conditions of License," involving the licensee's failure to maintain available equipment needed to implement mitigating strategies to provide makeup to steam generators following loss of large areas of the plant due to explosions or fire. Specifically, the licensee failed to maintain available a portable alternate mitigation equipment pump related to the steam generator makeup strategy. The licensee entered this issue into their corrective action program as Condition Report CR-2016-010832.

The failure to maintain all necessary equipment available to implement mitigating strategies as required by regulations and conditions of the operating license was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems cornerstone and affected 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, Appendix L, "B.5.b Significance Determination Process," dated December 24, 2009, the inspectors determined the finding was of very low safety significance (Green) because it resulted in an unrecoverable unavailability of an individual mitigating strategy; but did not result in multiple unavailable mitigating strategies, or loss of all on-site, self-powered, portable pumping capability. The inspectors determined that no cross-cutting aspect was assigned because the performance deficiency was not reflective of present performance.

Inspection Report# : 2017001 (*pdf*)

Significance: G Mar 27, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate Heat Loads on Control Room Air Conditioning System

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to properly evaluate heat loads on the control room air conditioning system. Specifically, the licensee used a non-conservative assumption of the number of persons in the control room envelope when calculating the required capacity of the system. The licensee had only assumed there would be six personnel to be in the technical support center (which is included in the control room envelope) during a design basis event. However, the emergency plan nominally staffed the technical support center with 25 station personnel, and an additional five NRC personnel. The licensee entered this issue into their corrective action program as Condition Report CR-2017-000744.

The failure to evaluate heat loads to determine the required system capacity is a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the design control 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. Using Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," dated October 7, 2016, and Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the 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) 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 in accordance with the licensee's maintenance rule program. The inspectors determined that no cross-cutting aspect was assigned because the performance deficiency was not reflective of present performance.

Inspection Report# : 2017001 (*pdf*)

Significance:  Mar 27, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Use of Non-Design Fouling Factor for Component Cooling Water Heat Exchanger in Station Service Water Tornado Missile Calculation

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the use of a non-design fouling factor for the component cooling water heat exchanger in a design basis calculation evaluating a tornado missile strike of station service water system piping. The licensee entered this issue into their corrective action program as Issue Report IR-2017-001465.

The team determined that the failure to use the design fouling factor for the component cooling water heat exchanger in the tornado missile analysis of the station service water system discharge piping was a performance deficiency. This finding was more-than-minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the use of a non-conservative heat exchanger fouling factor in a design basis accident analysis resulted in a more restrictive temperature limit (i.e., less than the technical specification allowed value) of the safe shutdown impoundment. In accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions," the issue screened as having very low safety significance (Green) because it was a design or qualification deficiency that (1) did not represent a loss of operability or functionality; (2) did not represent an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of non-technical specification equipment; and (4) did not screen as potentially risk-significant due to seismic, flooding, or severe weather. The team determined that this finding did not have a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance. Specifically, the licensee performed the calculation in 1988, therefore, the performance deficiency occurred outside of the nominal three-year period for "present performance."

Inspection Report# : 2017001 (*pdf*)

Significance:  Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Scope the Containment Ventilation System in the Maintenance Rule Program

The inspectors identified a non-cited violation of 10 CFR 50.65(b)(2) associated with the licensee's failure to scope the containment ventilation system into the maintenance rule program. Specifically, the containment ventilation system, a non-safety related system that is relied upon to mitigate accidents or transients and used in emergency operating procedures, was not included in the scope of the monitoring program specified in 10 CFR 50.65(a)(1). In response to this issue the licensee scoped the system in the plants' maintenance rule monitoring program, and placed the equipment under 10 CFR 50.65(a)(1) monitoring requirements pending further review. The licensee entered this issue into the corrective action program as CR-2016-008491.

The failure to monitor the performance and condition of a system that meets the maintenance rule scoping criteria of 10 CFR 50.65(b)(2) is the 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. Using Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," dated July 1, 2012, and Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated October 7, 2016, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding affected the Mitigating Systems cornerstone and was of very low safety significance (Green), because the finding did not represent a loss of system function and the system was not designated as high safety-significant in accordance with the licensee's maintenance rule program. The finding has a human performance cross-cutting aspect associated with avoiding complacency, in that, the licensee failed to ensure that individuals recognized and planned for the possibility of mistakes and latent issues when re-evaluating the basis for excluding the system [H.12].

Inspection Report# : 2016004 (*pdf*)

Significance: G Nov 13, 2015

Identified By: NRC

Item Type: VIO Violation

Failure to Evaluate the Lack of Missile Protection on the Turbine Driven Auxiliary Feedwater Pumps' Steam Exhaust Piping

Green. The team identified a cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to evaluate the lack of missile protection on the turbine driven auxiliary feedwater pumps' steam exhaust piping. Specifically, since June 13, 2012, the licensee failed to verify the adequacy of design of the turbine driven auxiliary feedwater pumps' steam exhaust piping to withstand impact from a tornado driven missile hazard, or to evaluate for exemption from missile protection requirements using an approved methodology. This issue does not represent an immediate safety concern because the licensee performed an operability evaluation, which established a reasonable expectation of operability. The licensee entered this issue into the corrective action program for resolution as Condition Report CR-2015-007869.

The licensee's failure to analyze the effects of a tornado missile strike on the turbine driven auxiliary feedwater pumps' steam exhaust piping was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events factors 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 evaluate a design nonconformance on the turbine driven auxiliary feedwater pumps' steam exhaust piping for lack of missile protection. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012, the team determined that the finding is of very low safety significance (Green) because (1) the finding was not a deficiency affecting the design or qualification of a mitigating system; (2) the finding did not represent a loss of system and/or function; (3) the finding did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time; and (4) 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 in accordance with the licensee's maintenance rule program for greater than 24 hours. The finding has a human performance cross-cutting aspect associated with conservative bias because individuals failed to use decision making practices that emphasize prudent choices over those that are simply allowable [H.14]. (Section 4OA2.5a)

Inspection Report# : 2015008 (*pdf*)

Barrier Integrity

Significance: G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Adequately Assess Risk and Implement Risk Management Actions for Proposed Maintenance

The inspectors identified a non-cited violation of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the licensee's failure to adequately assess risk and implement required risk management actions for a planned maintenance activity. Specifically, the licensee failed to evaluate the risk and implement required risk management actions associated with disabling a hazard barrier and breaching the control room envelope when blocking open door E-40A. This issue did not represent an immediate safety concern because, at the time of identification, the licensee stopped the activity and secured the door. The licensee entered this issue into the corrective action program for resolution as Condition Report CR-2017-006019.

The failure to adequately assess the risk and implement required risk management actions for proposed maintenance activities was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affected the associated objective to ensure physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, Flowchart 2, "Assessment of Risk Management Actions," the inspectors determined the need to calculate the risk deficit to determine the significance of this issue. A senior reactor analyst determined the finding to have very low safety significance (Green) based on combining the effects of the degradation of the radiological barrier and tornado missile barrier functions. The analyst performed a qualitative review of the screening criteria in Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," for the degradation of the radiological barrier function for the control room and considered the short exposure time ($2.9E-5$ years) and the Comanche Peak specific high winds frequency ($3.0E-4$ /year) for the tornado missile barrier function of the control room to determine that the incremental core damage probability deficit and the incremental large early release probability deficit were less than $1E-6$ and $1E-7$, respectively. The finding has a human performance cross-cutting aspect associated with procedure adherence, in that operations personnel failed to follow procedures when allowing door E-40A to be opened.

Inspection Report# : 2017002 (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : November 29, 2017

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