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

February 8, 2018

Mr. Ken J. Peters, Senior Vice President
and Chief Nuclear Officer
Attention: Regulatory Affairs
Vistra Operations Company LLC
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2 – NOTIFICATION OF NRC DESIGN BASES ASSURANCE INSPECTION (PROGRAMS) (05000445/2017007 AND 05000446/2017007)

Dear Mr. Peters:

On December 15, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Nuclear Power Plant, Units 1 and 2. The NRC team discussed the results of this inspection with Mr. T. McCool, Site Vice President, and other members of your staff. On January 30, 2018, the team held a re-exit of the inspection with Mr. D. Goodwin, Director of Site Engineering, and other members of your staff, due to changes in the characterization of the violations. The results of this inspection are documented in the enclosed report.

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

Further, the team documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating this violation as an NCV consistent with Section 2.3.2.a of the 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; and the NRC resident inspectors at the Comanche Peak Nuclear Power Plant, Units 1 and 2.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspectors at the Comanche Peak Nuclear Power Plant, Units 1 and 2.

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

Sincerely,

/RA/

Thomas R. Farnholtz, Chief
Engineering Branch 1
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000445/2017007 and
05000446/2017007
w/Attachment: Supplemental Information

cc: Electronic Distribution

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000445 and 05000446
License:	NPF-87 and NPF-89
Report:	05000445/2017007; 05000446/2017007
Licensee:	Vistra Operations Company LLC
Facility:	Comanche Peak Nuclear Power Plant, Units 1 and 2
Location:	6322 N. FM-56, Glen Rose, Texas
Dates:	December 4 through January 30, 2018
Team Leader:	R. Kopriva, Senior Reactor Inspector
Inspectors:	J. Braisted, Ph.D., Reactor Inspector C. Stott, Reactor Inspector
Approved By:	Thomas R. Farnholtz Chief, Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY

IR 05000445/2017007; 05000446/2017007 12/04/2017 – 01/30/2017; Comanche Peak Nuclear Power Plant, Units 1 and 2; NRC Inspection Procedure 71111.21N, Design Bases Assurance (Programs). The inspection activities described in this report were performed between December 4, 2017, and January 30, 2018, by three inspectors from the NRC's Region IV office. Three findings of very low safety significance (Green) are documented in this report. These findings involved violations of NRC requirements. 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‟s 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 team identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions." Specifically, prior to December 6, 2017, Procedures OPT-102A/B, "Operations Shiftly Routine Tests," verified the temperature in room X-175, component cooling water heat exchanger area, at 122 degrees Fahrenheit, whereas the qualified life calculation for 1-FT-4537B, component cooling water heat exchanger 1-02 recirculation flow transmitter, used 104 degrees Fahrenheit for its normal operating temperature. In response to this issue, the licensee performed an initial review of room temperatures over the past two years and determined that the maximum temperature had not exceeded 104 degrees Fahrenheit to ensure the qualified life of 1-FT-4537B had not been adversely affected. This finding was entered into the licensee's corrective action program as IR-2017-013261, CR-2017-013264, CR-2017-013270, and CR-2017-013405.

  The team determined that the failure to verify that normal operating room temperatures were at or below the temperature used in the qualified life calculations for the environmental qualification of components important to safety was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it had the potential to lead to a more significant safety concern if left uncorrected. Specifically, components could be exposed to temperatures greater than those used in their qualified life calculations, thus, reducing the availability, reliability, and capability to perform their intended design function during a design bases event. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding was not assigned a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance. (Section 1R21.b.1)

- Green. The team identified a Green, non-cited violation with two examples of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," which states, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Specifically, prior to December 14, 2017, for Example 1, Procedure ECE-6.08, "Determination of Shelf Life," Revision 4, was inadequate, because the procedure allowed no shelf life to be assigned to components with shelf lives greater than 40 years based upon generic industry data, without having to verify and ensure compliance with other available data for storage, such as temperature, which could adversely affect the qualified life of the component. For Example 2, the licensee failed to follow Procedure ECE-6.02-02, "Engineering Review of Procurement Documents," which resulted in spare components being stored in a facility where temperatures had exceeded the temperature specified by the vendor. For both examples, the team identified that the licensee had not considered a requirement to limit storage temperature of environmentally qualified components and spare parts to less than the vendor requirements. In response to this issue, the licensee performed an initial review of storage facility temperatures over the past 3 years and determined that the average temperature remained below 90 degrees Fahrenheit in both warehouses, but that temperatures had exceeded 90 degrees Fahrenheit for 3 months each year in one of the warehouses. This finding was entered into the licensee's corrective action program as IR-2017-013519, IR-2017-013422, IR-2017-013424, and IR-2017-013494.

  The team determined that the failure to control activities affecting quality prescribed by documented procedures for components important to safety was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it had the potential to lead to a more significant safety concern if left uncorrected. Specifically, for Example 1, components could be placed into service that were either beyond their vendor-specified shelf life or not stored in accordance with vendor specifications, and for Example 2, components could be placed into service that had not been stored in accordance with vendor specifications and were either beyond their vendor-specified shelf life or potentially degraded. For both examples, the results would be a reduction in the availability, reliability, and capability to perform their intended design function during a design bases event. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding was not assigned a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance. (Section 1R21.b.2)

- Green. The team identified a Green, non-cited violation of Technical Specification 5.4.1 which states, in part, "Written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Appendix A, Section 9, "Procedures for Performing Maintenance," states, in part, "Preventive maintenance schedules should be developed to specify lubrication schedules, inspections of equipment, replacement of such items as filters and strainers, and inspection or replacement of parts that have a

specific lifetime such as wear rings." Specifically, prior to December 14, 2017, component cooling water heat exchanger 1-02 recirculation flow transmitter, 1-FT-4537b, did not have a specified schedule for the replacement of cover O-rings required for environmental qualification. In response to this issue, the licensee verified that the O-rings had not exceeded their qualified life based upon the initial installation date of the transmitter. This finding was entered into the licensee's corrective action program as IR-2017-013491 and IR-2017-013500.

The team determined that the failure to specify a schedule for the replacement of items related to the environmental qualification of components important to safety was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it had the potential to lead to a more significant safety concern if left uncorrected. Specifically, the failure to ensure that O-rings required for the environmental qualification of flow transmitters are replaced prior to the end of their qualified life could reduce the availability, reliability, and capability of those transmitters to perform their intended design function during a design bases event. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding was not assigned a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance. (Section 1R21.b.3)

Licensee-Identified Violations

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

REPORT DETAILS

1. REACTOR SAFETY

1R21 Design Basis Assurance Inspection (Programs) (71111.21N)

a. Inspection Scope

The team performed an inspection as outlined in NRC Inspection Procedure 71111.21N, Attachment 1, "Environmental Qualification under 10 CFR 50.49 Programs, Processes, and Procedures." The team assessed the implementation of the environmental qualification program as required by 10 CFR 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants" by Comanche Peak Nuclear Power Plant, Units 1 and 2. The team evaluated whether Comanche Peak Nuclear Power Plant, Units 1 and 2, staff properly maintained the environmental qualification of electrical equipment important to safety throughout plant life, established and maintained required environmental qualification documentation records, and implemented an effective corrective action program to identify and correct environmental qualification related deficiencies.

The inspection included review of environmental qualification program procedures, component environmental qualification files, environmental qualification test records, equipment maintenance and operating history, maintenance and operating procedures, vendor documents, design documents, and calculations. The team interviewed program owners, engineers, maintenance staff, and warehouse staff. The team performed in-plant walkdowns (where accessible) to verify equipment was installed as described in the environmental qualification component documentation files for Comanche Peak Nuclear Power Plant, Units 1 and 2; and that the components were installed in their tested configuration. Additionally, the team performed in-plant walkdowns to determine whether equipment surrounding the components could fail in a manner that could prevent the safety functions of the components, and to verify that components located in areas susceptible to a high energy line break were properly evaluated for operation in a harsh environment. The team reviewed and inspected the storage of replacement parts and associated procurement records to verify environmental qualification parts approved for installation in the plant were properly identified and controlled, and that storage and environmental conditions did not adversely affect the components' qualified lives. Documents reviewed for this inspection are listed in the attachment.

In accordance with the inspection procedure, the team selected initially nine components to assess the adequacy of the environmental qualification program. Component samples selected for this inspection were:

- 1-8701B, RHR recirculation isolation valve
- 1-FCV-0610, RHR pump min flow valve
- CP2-EPMCEB-04, boric acid transfer pump MCC
- 1-FIS-0610, RHR pump discharge flow indicator
- 1-8811B, containment sump to RHR pump isolation valve
- CP2-EPSWEB, 480 V switch gear
- 1-PS-4519, CCW safeguard supply header pressure switch
- 1-FT-4537B, CCW heat exchanger flow transmitter

- 2-PCV-0455A, pressurizer PORV solenoid valve

b. Findings

1. Failure to Verify Normal Operating Room Temperatures

Introduction. The team identified a Green, non-cited violation of Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the failure to verify normal operating room temperatures for environmental qualification purposes.

Description. The team reviewed material associated with 1-FT-4537B, component cooling water heat exchanger 1-02 recirculation flow transmitter. The system component evaluation worksheet for 1-FT-4537B indicated that the transmitter was located in room X-175, component cooling water heat exchanger area, and had a qualified life of 44.96 years based upon a normal operating temperature of 104 degrees Fahrenheit.

During the team's review of documents associated with room X-175, it was found that the room temperature was verified per Procedures OPT-102A/B, "Operations Shiftly Routine Tests," which identified that the room temperature was required to be at or below 122 degrees Fahrenheit. This maximum normal room temperature was also found in several other design bases documents including Final Safety Analysis Report Table 9.4-2, "Design Conditions - Indoor," and Technical Requirements Manual 13.7.36, "Area Temperature Monitoring." The 122 degree Fahrenheit temperature limitation was well above the temperature used in the qualified life calculation for component cooling water heat exchanger 1-02 recirculation flow transmitter, 1-FT-4537B. This meant that the temperature in room X-175 could have exceeded the temperature used in the qualified life calculations for extended periods of time without any action on the part of the licensee to either recalculate the qualified life of the transmitter or replace the transmitter earlier than anticipated.

The team requested documentation associated with room temperatures for room X-175. The licensee provided the last 2 years of temperature data for room X-175, and upon review of the documented data, the team noted that the temperature in the component cooling water heat exchanger area over the past 2 years had not exceeded 104 degrees Fahrenheit. This evidence confirmed that the qualified life of component cooling water heat exchanger 1-02 recirculation flow transmitter, 1-FT-4537B had not been affected.

The team determined that the appropriate temperature to be verified in room X-175 was 104 degrees Fahrenheit and not 122 degrees Fahrenheit based upon the qualified life calculation for 1-FT-4537B. Subsequently, the licensee documented the discrepancy between the qualified life temperature and procedure, M1/2-3000 Special Documents, the final safety analysis report, and Technical Requirements Manual, in several issue and corrective action reports (IR-2017-013261, CR-2017-013264, CR-2017-013270, and CR-2017-013405). During the licensee's preliminary extent of condition review, they identified that as many as two dozen other rooms, which contain components that also require environmental qualification, may be affected.

Analysis. The team determined that the failure to verify that normal operating room temperatures were at or below the temperature used in the qualified life calculations for the environmental qualification of components important to safety was a performance

deficiency. The performance deficiency was more than minor, and therefore a finding, because it had the potential to lead to a more significant safety concern if left uncorrected. Specifically, components could be exposed to temperatures greater than those used in their qualified life calculations, thus, reducing the availability, reliability, and capability to perform their intended design function during a design bases event. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding was not assigned a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance.

Enforcement. The team identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions." Contrary to the above, prior to December 6, 2017, the licensee did not assure that the design bases were correctly translated into procedures. Specifically, Procedures OPT-102A/B, "Operations Shiftly Routine Tests," verified the temperature in room X-175, component cooling water heat exchanger area, at 122 degrees Fahrenheit, whereas the qualified life calculation for 1-FT-4537B, component cooling water heat exchanger 1-02 recirculation flow transmitter, used 104 degrees Fahrenheit for its normal operating temperature. In response to this issue, the licensee performed an initial review of room temperatures over the past two years and determined that the maximum temperature had not exceeded 104 degrees Fahrenheit to ensure the qualified life of 1-FT-4537B had not been adversely affected. This finding was entered into the licensee's corrective action program as IR-2017-013261, CR-2017-013264, CR-2017-013270, and CR-2017-013405. Because this finding was of very low safety significance and has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy. NCV 05000445/2017007-01 and 05000446/2017007-01, "Failure to Ensure Normal Operating Room Temperatures."

2. Failure to Comply with Station Procedures for Assigning Correct Shelf Life and Storage Requirements of Qualified Components

Introduction. The team identified a Green, non-cited violation of Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," with two examples of procedural compliance, for assigning correct shelf life and storage requirements of replacement parts to maintaining their qualified life.

Example 1

Description. The team had selected component 1-FT-4537B, component cooling water heat exchanger 1-02 recirculation flow transmitter as one of the components to inspect. According to its system component evaluation worksheet, 1-FT-4537B was a Rosemount model 1153DB6 pressure transmitter. One of the documents associated

with pressure transmitter 1-FT-4537B was the vendor manual for the transmitter, which states, in part, to "store all spare transmitters and spare component parts in accordance with ANSI N45.2.2 level B." Furthermore, the manual states, in part, "qualified transmitters, spare circuit boards, and spare O-rings: the qualified life (as defined in qualification test report 108025) plus the shelf life is equal to the typical design life of the plant (40 years) when the ambient storage temperature is below 90 °F." This information applies to Rosemount 1153 Series B and D and 1154 Series H transmitters.

The team requested information on the shelf life for the spare transmitter O-rings. The licensee informed the team that they had not assigned a shelf life for the spare O-rings. The licensee referred to procedure ECE-6.08, "Determination of Shelf Life," Revision 4, which allows for the following three methods to determine shelf life: 1) shelf life tables, 2) manufacturer recommendation, and 3) natural aging data. Step 3.2, "Shelf Life Evaluation/Re-evaluation," states, in part, "the Responsible Engineer should select the appropriate method to determine the Shelf Life and document this method on the Evaluation of Shelf Life and/or Extension of Expiration Date form (ECE-6.08-F2), or electronically in MAXIMO." Step 3.2.2, "Shelf Life Determination by Manufacturer's Recommendation," states, in part, "when a manufacturer's Shelf Life statement conflicts with the Shelf Life tables (Attachment 5), the Item should be assigned a Shelf Life in accordance with the Shelf Life tables (Attachment 5)." Furthermore, Step 3.2.4, "Shelf Life Assignment," states, in part, "if Shelf Life is greater than or equal to 40 years, verify the shelf life checkbox is unchecked to denote no Shelf Life."

The team reviewed ECE-6.08, Attachment 5, "List of Generic Shelf Lives," and found the shelf life for ethylene propylene rubber, which is the same material as the transmitter O-rings, was 60 years, as calculated using the Arrhenius Methodology. The generic shelf lives in Attachment 5 were obtained from EPRI NP-6408, "Plant Engineering: Guidelines for Establishing, Maintaining, and Extending the Shelf Life Capability of Limited Life Items," Revision 1.

The team identified that when the manufacturer's shelf life and generic shelf life conflict, licensee Procedure ECE-6.08 instructs the responsible engineer to default to the generic shelf life. However, the generic shelf lives are based upon some underlying assumptions about storage that are not fed back into the licensee's system for material storage. Specifically, for Rosemount transmitter O-rings, ECE-6.08, would instruct the responsible engineer to first assign a shelf life of 60 years based upon the generic shelf life in Attachment 5 because it conflicts with the manufacturer's shelf life. Next, the ECE-6.08 would instruct the responsible engineer to denote that the O-rings had no shelf life because the shelf life first assigned was greater than 40 years. However, the initial assignment of 60 years was based upon a storage temperature of 79 degrees Fahrenheit, but no special storage requirements would be assigned other than Level B. Level B storage is nominally controlled to temperatures between 40 and 140 degrees Fahrenheit. Furthermore, the manufacturer only guarantees its qualified life for environmental qualification purposes based upon its shelf life and storage requirements. If these requirements were not adhered to, the qualified life would need to be adjusted accordingly, which is also not identified in ECE-6.08. Additionally, the team also noted that the activation energy used for the qualified life (Arrhenius Methodology) of the O--ring, as documented in Plant Qualification Evaluation 208, was 1.23 electron-volts, whereas the activation energy used in the EPRI NP-6408 generic shelf life calculation was 1.34 electron-volts. A greater activation energy used in the

Arrhenius Methodology, assuming all other inputs remained constant, would lead to a longer (i.e., less conservative) calculated life.

Because Procedure ECE-6.08 defaults to the use of a generic shelf life without additional consideration and evaluation of storage temperatures and activation energies, the team determined that the procedure was not adequate for generic use for environmental qualification purposes. The licensee documented this issue in Corrective Action Report IR-2017-013519.

Example 2

Description. During the team's review of 1-FT-4537B, component cooling water heat exchanger 1-02 recirculation flow transmitter, the team noted that according to its system component evaluation worksheet, 1-FT-4537B was a Rosemount model 1153DB6 pressure transmitter. During the team's review of Plant Qualification Evaluation 208 for 1-FT-4537B, the team noted that in order to get the maximum qualified life out of the transmitter, certain subcomponents of the transmitter would have to be replaced. The subcomponents of concern were cover O-rings and circuit boards (amplifier and calibration).

The team requested information pertaining to any shelf life and storage level requirements for the transmitter and any spare parts (subcomponents). The licensee's initial search of their electronic system for material control found that only components requiring storage level B contained the documented information the team requested. Subsequently, the team reviewed the vendor manual for the transmitter to understand what the vendor recommendations were for shelf life and storage of their components. The vendor manual states, in part, to "store all spare transmitters and spare component parts in accordance with ANSI N45.2.2 level B." However, the manual also states, in part, "For qualified transmitters, spare circuit boards, and spare O-rings: the qualified life (as defined in Qualification Test Report 108025) plus the shelf life is equal to the typical design life of the plant (40 years) when the ambient storage temperature is below 90 °F." This information applies to Rosemount 1153 Series B and D, and 1154 Series H transmitters.

The team reviewed Procedure ECE-6.02-02, "Engineering Review of Procurement Documents," Revision 18. Steps 3.12, "Protection Level/Storage Level," and 3.13, "Shelf Life," instructs the responsible engineer to record shelf life and storage level information on Procurement Document Review Summary Form ECE-6.02-02-F1. Warehouse personnel then store components based upon that information.

Procedure WHS-002, "Handling and Storage," Revision 15, Step 6.2.2.b, which states, in part, "Minimum temperature shall be 40 Degrees Fahrenheit and maximum temperature shall be 140 Degrees Fahrenheit" for Level B storage, which is based on the requirements of ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (During the Construction Phase)." However, ANSI N45.2.2-1975, Section 6.1.2, "Levels of Storage," states, in part, "Minimum temperature shall be 40 °F and maximum temperature shall be 140 °F or less if so stipulated by a manufacturer," for Level B storage.

The team was concerned that the licensee had not controlled the storage temperatures for the Rosemount transmitters and subcomponents adequately and requested

information regarding the current storage of these components. The licensee determined that at least a dozen transmitters and subcomponents were being stored in two Level B warehouses on-site. These warehouses were being controlled to the Level B temperature requirements between 40 and 140 degrees Fahrenheit, not to the 90 degree Fahrenheit vendor requirement. The licensee performed a review of warehouse temperatures over the past 3 years and determined that the average temperature remained below 90 degrees Fahrenheit in both warehouses, but that temperatures had exceeded 90 degrees Fahrenheit for 3 months a year in one of the warehouses. Because the vendor information about shelf life and storage requirements had not been identified on the appropriate form per Procedure ECE-6.02-02, the transmitters and subcomponents were not stored in accordance with the vendor requirements of 90 degrees Fahrenheit or less. The licensee had failed to follow Procedure ECE-6.02-02, "Engineering Review of Procurement Documents." The licensee documented these issues in IR-2017-013422, IR-2017-013424, and IR-2017-013494.

Analysis. The team determined that the failure to control activities affecting quality prescribed by documented procedures for components important to safety was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it had the potential to lead to a more significant safety concern if left uncorrected. Specifically, for Example 1, components could be placed into service that were either beyond their vendor-specified shelf life or not stored in accordance with vendor specifications, and for Example 2, components could be placed into service that had not been stored in accordance with vendor specifications and were either beyond their vendor-specified shelf life or potentially degraded. For both examples, the results would be a reduction in the availability, reliability, and capability to perform their intended design function during a design bases event. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding was not assigned a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance.

- Enforcement. The team identified a Green, non-cited violation with two examples of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," which states, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to the above, prior to December 14, 2017, the licensee did not prescribe by documented procedures appropriate to the circumstances activities affecting quality nor did the licensee accomplish activities affecting quality in accordance with procedures. Specifically, for Example 1, Procedure ECE-6.08, "Determination of Shelf Life," Revision 4, was inadequate, because the procedure allowed no shelf life to be assigned to components with shelf lives greater than 40 years based upon generic industry data, without having to verify and ensure compliance with other available data for storage, such as temperature, which could adversely affect the qualified life of the component. For Example 2, the licensee failed to follow Procedure ECE-6.02-02, "Engineering

Review of Procurement Documents," which resulted in spare components being stored in a facility where temperatures had exceeded the temperature specified by the vendor. For both examples the team identified that the licensee had not considered a requirement to limit storage temperature of environmentally qualified components and spare parts to less than the vendor requirements. In response to this issue, the licensee performed an initial review of storage facility temperatures over the past 3 years and determined that the average temperature remained below 90 degrees Fahrenheit in both warehouses, but that temperatures had exceeded 90 degrees Fahrenheit for 3 months each year in one of the warehouses. This finding was entered into the licensee's corrective action program as IR-2017-013519, IR-2017-013422, IR-2017-013424, and IR-2017-013494. Because this finding was of very low safety significance and has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy. NCV 05000445/2017007-02 and 05000446/2017007-02, "Failure to Comply with Station Procedures for Assigning Correct Shelf Life and Storage Requirements of Qualified Components."

3. Failure to Specify a Schedule for the Replacement of Items

Introduction. The team identified a Green, non-cited violation of Technical Specification 5.4.1, "Procedures," involving the failure to specify a schedule for the replacement of items related to environmental qualification.

Description. The team reviewed material associated with 1-FT-4537B, component cooling water heat exchanger 1-02 recirculation flow transmitter. According to its System Component Evaluation Worksheet, 1-FT-4537B is a Rosemount model 1153DB6 pressure transmitter. During their review of Plant Qualification Evaluation 208 for 1-FT-4537B, the team noted that the qualified life of the cover O-rings, circuit boards (amplifier and calibration), and transmitter body were listed as 40.3, 22.2, and 44.96 years, respectively, based on a maximum normal temperature of 104 degrees Fahrenheit.

The team requested information related to preventive maintenance activities required for maintaining environmental qualification for 1-FT-4537B. The licensee initially provided a brief history of maintenance activities on this transmitter. In 2011, the licensee discovered that the circuit boards had not been replaced within 22.2 years of the installation date, but had subsequently replaced the boards and created a preventive maintenance task for that activity (CR-2011-007628). In 2017, the licensee discovered that it did not have a preventive maintenance task for the replacement of the transmitter itself at 44.96 years, which becomes important given that the installation (beginning of life) date of the transmitter is different than, and prior to the initial startup of the unit (CR-2017-001364). The team identified that there was no specific preventive maintenance task for O-ring replacement.

According to the vendor manual for the transmitter there are two cover O-rings. The vendor manual also states that an O-ring must be replaced if its cover is removed. The licensee furnished evidence that one of the cover O-rings would get replaced when the circuit boards were replaced. Therefore, the team determined that a specific preventive maintenance task for this cover O-ring was not required. However, the team determined that the other O-ring would not get replaced before the end of its qualified life without a

specific preventive maintenance task. The licensee documented these issues in IR-2017-013491 and IR-2017-013500.

Analysis. The team determined that the failure to specify a schedule for the replacement of items related to the environmental qualification of components important to safety was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it had the potential to lead to a more significant safety concern if left uncorrected. Specifically, the failure to ensure that O-rings required for the environmental qualification of flow transmitters are replaced prior to the end of their qualified life could reduce the availability, reliability, and capability of those transmitters to perform their intended design function during a design basis event. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding was not assigned a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance.

Enforcement. The team identified a Green, non-cited violation of Technical Specification 5.4.1 which states, in part, "Written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Appendix A, Section 9, "Procedures for Performing Maintenance," states, in part, "Preventive maintenance schedules should be developed to specify lubrication schedules, inspections of equipment, replacement of such items as filters and strainers, and inspection or replacement of parts that have a specific lifetime such as wear rings." Contrary to the above, prior to December 14, 2017, the licensee did not specify schedules for the replacement of items that have a specific lifetime. Specifically, component cooling water heat exchanger 1-02 recirculation flow transmitter, 1-FT-4537B, did not have a specified schedule for the replacement of cover O-rings required for environmental qualification. In response to this issue, the licensee verified that the O-rings had not exceeded their qualified life based upon the initial installation date of the transmitter. This finding was entered into the licensee's corrective action program as IR-2017-013491 and IR-2017-013500. Because this finding was of very low safety significance and has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy. NCV 05000446/2017007-04, "Failure to Specify a Schedule for the Replacement of Items."

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152)

The team reviewed condition requests associated with the selected components, operator actions and operating experience notifications. There were issues with the resolution of a significant percentage of the condition reports reviewed by the team. However, because of the limited number of condition reports reviewed and the narrow focus of condition reports associated with the nine components selected for the

inspection, this is not a statistically significant evaluation of the licensee's overall corrective action program. The team noted that the licensee has difficulty resolving environmentally qualified items in their corrective action program based on the fact that condition reports known to the team that had issues impacting or related to the environmental qualification program were not being closed in a timely manner.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On December 15, 2017, the team presented the inspection results to Mr. T. McCool, Site Vice President, and other members of the licensee staff. On January 30, 2018, the team held a re-exit of the inspection with Mr. D. Goodwin, Director of Site Engineering, and other members of your staff, due to changes in the characterization of the violations. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the team had been returned or destroyed.

4OA7 Licensee Identified Violation

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a licensee-identified, non-cited violation.

> Title 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," which states, in part, "measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected." Contrary to the above, from October 1, 2012, to the present, the licensee failed to establish measures that would assure nonconformances are promptly corrected. Specifically, in October 2012, the licensee identified three subcomponents within GE IC7700 series motor control centers that had exceeded their qualified lives. The licensee performed operability determinations on each one and found they were still operable, but nonconforming. The licensee entered this issue into their corrective action program as Condition Report CR-2012-009856. During October 2017, the licensee staff identified this issue again while performing a self-assessment of the environmental qualification program, performed prior to the NRC design bases assurance inspection (programs). The team evaluated the significance of the issue under the Significance Determination Process, as defined in Inspection Manual Chapter 0609.04, "Initial Characterization of Findings," and Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at-Power," dated June 19, 2012. The team concluded the finding was of very low safety significance (Green) because all questions in Exhibit 2 could be answered no. The licensee entered this issue into their corrective action program as Condition Report CR-2017-012261.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Carlsen, Electrical/I&C Design Engineering
D. Christiansen, Director, Training
B. Clark, Operations
T. Gilder, Manager, Design Engineering Manager
D. Goodwin, Director, Site Engineering
J. Hicks, Regulatory Affairs
T. Hope, Manager, Regulatory Affairs
J. Lloyd, Manager, Shift Operations
T. McCool, Site Vice President
M. Reeves, Director, Maintenance
R. Segura, Engineer, Electrical Engineering
S. Sewell, Senior Director, Engineering, Programs, and Regulatory Affairs
M. Stakes, Director, Organizational Effectiveness
B. Thompson, Director, Programs and Tactical Engineering
C. Tran, Manager, Programs Engineering
K. Vehstedt, Regulatory Affairs
J. White, Engineering Programs (EQ)
H. Winn, Manager, Strategic Engineering

NRC Personnel

J. Josey, Senior Resident
R. Kumana, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000445/2017007-01; 05000446/2017007-01	NCV	Failure to Verify Normal Operating Room Temperatures. (Section 1R21.b.1)
05000445/2017007-02; 05000446/2017007-02	NCV	Failure to Comply with Station Procedures for Assigning Correct Shelf Life and Storage Requirements of Qualified Components. (Section 1R21.b.2)
05000446/2017007-03	NCV	Failure to Specify a Schedule for the Replacement of Items. (Section 1R21.b.4)

LIST OF DOCUMENTS REVIEWED

Calculations

Number	Title	Revision
ME-CA-0000-5399	Impact of Stretch Power Uprate on Radiation Environments in EQ Zones and at Specific EEQ Component Locations	1
SI-CA-0000-0663	Auxiliary Building Flooding Analysis	2

Condition Reports

CR 2007-002309-00	CR-2013-007443	CR-2015-001444	CR-2016-001822
CR 2011-006978	CR-2013-007463	CR 2015-002084	CR-2016-009494
CR-2011-007628	CR-2013-007465	CR 2015-004441	CR-2017-012261
CR-2012-007613	CR-2014-005758	CR 2015-007420	TR-2017-001364
CR-2012-009856	CR-2015-000187	CR 2015-008152	TR-2017-012850
CR-2013-007102	CR-2015-001639	CR-2015-012033	

Condition Reports Generated During the Inspection

CR-2017-013270	IR-2017-013305	IR-2017-013395	IR-2017-013443
CR-2017-013373	IR-2017-013322	IR-2017-013405	IR-2017-013491
IR-2017-013219	IR-2017-013373	IR-2017-013422	IR-2017-013494
IR-2017-013261	IR-2017-013378	IR-2017-013424	IR-2017-013500
IR-2017-013264	IR-2017-013387	IR-2017-013433	IR-2017-013519
IR-2017-013270	IR-2017-013389		

Design Bases Documents

Number	Title	Revision
DBD-EE-031	Environmental Qualification of Safety-Related Electrical Equipment	8
DBD-ME-076	Postulated Environments for Equipment Qualification	12

Environmental Qualification Test Reports

Number	Title	Revision
80GPC007	IC7700 Motor Control Center Environmental Qualification Test Report to the Institute of Electrical and Electronics Engineers Standard 323-1974	7

Environmental Qualification Data Packages

Number	Title	Revision Date
413.4	Model IC-7700 (GE SBM Selector Switch)	October 8, 2014
413.1	General Electric Model IC-7700	October 8, 2014
106-2	Limitorque/Reliance Model SB-2-60 / Insulation Class F, Type LR & Limitorque Fibrite Limit and Torque Switch	October 8, 2013
213	Raychem Corp. WCSF-N In-Line Bolted Splice Assemblies	3
102-1	Limitorque SB, SMB, SMC, SBD Motor Operated Valve Actuator With Reliance Class B AC Motor Insulation	May 7, 2014

Generic Qualification Evaluations

100.1	208	608	CP011

Plant Qualification Evaluations

100.1-9	208	608-1	234	CP011

Procedures

Number	Title	Revision
INC-2027	CPSES Instrument and Control Manual – calibration of ITT Barton Differential Pressure Indicating Switches.	6
MSM-G0-0203	CPNPP Maintenance Section – Mechanical Manual, Flange Alignment and Fastener Torque Data	7
MSG-0203	CPNPP Maintenance Section – Generic Manual, Removal and Installation of Handrails and Floor Grating	0
MSE-P0-8349	Limitorque Actuator Periodic Electrical and Mechanical Inspection	9
STA-421	Control of Issue Reports	21
ECE-6.02-02	Engineering Review of Procurement Documents	18
ECE-6.08	Determination of Shelf Life	4
OPT-102A	Operations Shiftly Routine Tests	15
OPT-102B	Operations Shiftly Routine Tests	9
STA-677	Preventive Maintenance Program	11
STA-708	Seismic and Environmental Qualification	7
WHS-002	Handling and Storage	15
EPG-2.01	Equipment Qualification Program Impact Log	3
EPG-2.02	Environmental Equipment Qualification Summary Packages (EEQSP)	4
EPG-2.03	Environmental Qualification Of Mechanical Equipment And Preparation Of Mechanical Equipment Qualification Summary Packages (MEQSPs)	2
EPG-2.05	Equipment Qualification Maintenance Manual	3
STA-708	Seismic And Environmental Qualification	7
ECE-5.01-04	Technical Evaluation of Replacement Items (TERI)	11

Procedures

Number	Title	Revision
ECE-5.01	Design Control Program	26
ECE-5.08	Standard Design Process	3
ECE-5.08-01	Comanche Peak (Utility) Design Change Process	0
ECE-5.09	Engineering Design Review Process	2
ECE-6.02-02	Engineering Review of Procurement Documents	18
ECE-6.02-05	Technical and Quality Assurance Requirements	13
ECE 6.02-03	Critical Characteristics Development	9
EGI-5.08-01	Final Design Authorizations	3
EGI-5.08-02	Design Change Notices and Related Process Documents	1

Vendor Manuals

Number	Title	Revision
CP-0616-002	ITT Barton Differential Pressure Indicating Units Model Series 300 Thru 1500	12
00809-0100-4302	Rosemount 1153 Series B Alphaline Nuclear Pressure Transmitter	BA

Work Orders

4189287	4748117	5008042	5055425	5196787
4405092	4762424	5008049	5066706	5196890
4531319	4851659	5008062	5129467	5219426
4613413	4926271	5008097	5141604	5261169
4680454	4991710	5018205	5153434	

Miscellaneous

Number	Title	Revision/Date
	Vistra OPCO Comanche Peak Nuclear Power Plant Quality Assurance Manual	22
1-8811B-MO	Equipment Qualification Maintenance Manual, Containment Sump To RHR Pump 1-02 Suction Isolation Valve More Remarks: ACM,R.G. 1.97,EQ,SQ,1E (Component Is Qualified To In-containment Environments - EEQSP-MS-020B.1-02)	June 1, 1981
1-FIS-0610	Equipment Qualification Maintenance Manual, Residual Heat Removal Pump 1-01 Discharge Flow Indicating Switch Remarks: *RD* *RH*	March 25, 1981
212B7150, sheet 14	1E MCC Transfer Switch Schematic Diagram (Unit 1 and 2)	CP-5
CP2-EPSWEB-04	Equipment Qualification Maintenance Manual, 480 VAC Switchgear 2EB4 Remarks: Includes Electronic Parts	July 18, 1983
E2-0007, sheet C	Safeguard and Auxiliary Buildings Safeguard 480V MCC's One Line Diagram	CP-29
EQML 1-FIS-0610	System Component Evaluation Worksheet (SCEW), ITT Barton Process Inst. & Cont., Residual Heat Removal Pump 1-01 Discharge Flow Indication Switch Remarks: RD, RH	
SSER 1	"Safety Evaluation Report Related to the Operation of Comanche Peak Steam Electric Station, Units 1 and 2," (Section 3.11 only)	October 1981
SSER 12	"Safety Evaluation Report Related to the Operation of Comanche Peak Steam Electric Station, Units 1 and 2," (Section 3.11 only)	October 1985
SSER 19	"Safety Evaluation Report Related to the Operation of Comanche Peak Steam Electric Station, Units 1 and 2,"(ALL)	November 1988
SSER 25	"Safety Evaluation Report Related to the Operation of Comanche Peak Steam Electric Station, Units 1 and 2," (Section 3.11)	September 1992
SSER 26	"Safety Evaluation Report Related to the Operation of Comanche Peak Steam Electric Station, Units 1 and 2," (Section 3.11)	February 1993
SSER 6	"Safety Evaluation Report Related to the Operation of Comanche Peak Steam Electric Station, Units 1 and 2," (Section 3.11)	November 1984

Miscellaneous

Number	Title	Revision/Date
SURV-2017-000047	NOS Performed Surveillance on CPNPP Environmental Qualification (EQ) Program	February 23, 2017
TR-2017-008282	Environmental Equipment Qualification Program (10CFR 50.49) Targeted Self-Assessment Report	October 31, 2017

Final Design Authorizations

FDA-2016-000037

Preventive Maintenance

348468

COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2 – NOTIFICATION OF NRC DESIGN BASES ASSURANCE INSPECTION (PROGRAMS) (05000445/2017007 AND 05000446/2017007) – February 8, 2018

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