



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

March 27, 2014

Rafael Flores, Senior Vice President
and Chief Nuclear Officer
Attention: Regulatory Affairs
Luminant Generation Company LLC
Comanche Peak Nuclear Power Plant
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2 – NRC
TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000445/2014008 AND
05000446/2014008

Dear Mr. Flores:

On March 19, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Nuclear Power Plant, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed in an initial exit meeting on February 13, 2014, with Mr. B. Mays, Assistant to the Chief Nuclear Officer, and other members of your staff. The team conducted a re-exit meeting on March 19, 2014, with Mr. T. Hope, Nuclear Licensing Manager, and other members of your staff.

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

If you contest the violations or significance of the violations in this report, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspectors at the Comanche Peak Nuclear Power Plant. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

If you disagree with the characterization of the cross-cutting aspect assigned to any finding 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 Inspectors at Comanche Peak Nuclear Power Plant.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

John L. Dixon Jr., Acting Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos.: 50-445, 50-446
License Nos.: NPF-87, NPF-89

Enclosure: Inspection Report No. 05000445/2014008 and 05000446/2014008
w/Attachment: Supplemental Information

cc w/Enclosure:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-445, 50-446

License: NPF-87, NPF-89

Report Nos.: 05000445/2014008 and 05000446/2014008

Licensee: Luminant Generation Company LLC

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

Location: FM-56, Glen Rose, Texas

Dates: January 27 through March 19, 2014

Team Leader: E. Uribe, Reactor Inspector, Engineering Branch 2

Inspectors: S. M. Alferink, Reactor Inspector, Engineering Branch 2
B. K. Correll, Reactor Inspector, Engineering Branch 2
J. L. Watkins, Reactor Inspector, Engineering Branch 2

Approved By: John L. Dixon Jr., Acting Branch Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000445/2014008 and 05000446/2014008; 01/27/2014 – 03/19/2014; Comanche Peak Nuclear Power Plant, Units 1 and 2; Triennial Fire Protection Team Inspection.

The report covered a two-week triennial fire protection team inspection by specialist inspectors from Region IV. One Green finding, which was a non-cited violation, was documented. The significance of inspection findings are indicated by their color (i.e., Green, White, Yellow, or Red) and determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The team reviewed a Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to ensure that quality related procedures provide adequate guidance for labeling and terminating cables during implementation of circuit modifications. Specifically, procedure CMP-EL-1006, "Cable Terminations," Revision 3, did not prescribe the appropriate human performance standards and cable label controls when installing new cable. As a result, a wiring error caused one of the two turbine-driven auxiliary feedwater pump steam supply valves to fail open when the hot shutdown panel transfer/isolation switch was taken to the remote position. The licensee entered this into the corrective action program as condition report CR-2013-000140. The corrective actions included: confirming that the same error did not exist for the other steam supply valve or for the Unit 1 transfer switch, retiring procedure CMP-EL-1006 and revising other maintenance section generic procedures that will be used to implement future circuit modifications.

The licensee's failure to ensure that procedures provide adequate guidance for labeling and terminating cables during circuit modifications was a performance deficiency. The finding was more than minor because if left uncorrected this could have the potential to lead to a more significant safety concern. Specifically, operation of the hot shutdown panel auxiliary feedwater transfer/isolation switch cannot be reliably performed. Using NRC Inspection Manual Chapter 0609, Appendix F, Attachment 1, "Part 1: Fire Protection SDP Phase 1 Worksheet," dated September 30, 2013, the finding was determined to be of very low safety significance (Green), by answering Step 1.3.1, Question 2, because the finding did not affect the reactor to be able to reach and maintain a safe shutdown condition. The finding had a human performance cross-cutting aspect in resources because leaders failed to ensure that personnel and procedures were available and adequate to support nuclear safety. [H.1] (Section 4OA3)

B. Licensee-Identified Violations

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

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (71111.05T)

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure 71111.05T, "Fire Protection (Triennial)," at the Comanche Peak Nuclear Power Plant, Units 1 and 2. The inspection team evaluated the implementation of the approved fire protection program in selected risk-significant areas with an emphasis on the procedures, equipment, fire barriers, and systems that ensure the post-fire capability to safely shutdown the plant.

Inspection Procedure 71111.05T requires the selection of three to five fire areas and one or more mitigating strategies for review. The inspection team used the fire hazards analysis section of the Comanche Peak Steam Electric Station Individual Plant Examination of External Events to select the following five risk-significant fire areas (inspection samples) for review:

- Fire Area EO, Unit 1 - Control Room
- Fire Area EQ, Unit 2 - Uninterruptible Power Supply AC Unit
- Fire Area ER, Unit 1 - Uninterruptible Power Supply AC Unit
- Fire Area SC, Unit 1 - Turbine Driven AFW Pump
- Fire Area SD, Unit 1 - Electrical Equipment Room/Train A Switchgear Room

The inspection team evaluated the licensee's fire protection program using the applicable requirements, which included plant Technical Specifications; Operating License Condition 2.G for Unit 1 and Unit 2; NRC safety evaluations and supplements; 10 CFR 50.48; and Branch Technical Position 9.5-1, Appendix A. The team also reviewed related documents that included the Final Safety Analysis Report, Sections 9.5 and 13.3B; the fire protection report; and the post-fire safe shutdown analysis. Specific documents reviewed by the team are listed in the attachment. Five fire area inspection samples and one mitigating strategy sample were completed.

.1 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the piping and instrumentation diagrams, safe shutdown equipment list, safe shutdown design basis documents, and the post-fire safe shutdown analysis to verify that the licensee properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for fires in the selected fire areas. The team observed walkdowns of the procedures used for achieving and maintaining safe shutdown in the event of a fire to verify that the procedures properly implemented the safe shutdown analysis provisions.

For each of the selected fire areas, the team reviewed the separation of redundant safe shutdown cables, equipment, and components located within the same fire area. The

team also reviewed the licensee's method for meeting the requirements of 10 CFR 50.48; Branch Technical Position 9.5-1, Appendix A; and 10 CFR Part 50, Appendix R, Section III.G. Specifically, the team evaluated whether at least one post-fire safe shutdown success path remained free of fire damage in the event of a fire. In addition, the team verified that the licensee met applicable license commitments.

b. Findings

No findings were identified.

.2 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe the material condition and configuration of the installed fire area boundaries (including walls, doors, and dampers) and verify that the electrical raceway fire barriers were appropriate for the fire hazards in the area. The team compared the installed configurations to the approved construction details, supporting fire tests, and applicable license commitments.

The team reviewed installation, inspection procedures, repair, and qualification records for a sample of penetration seals to ensure the fill material possessed an appropriate fire rating and that the installation met the engineering design. The team also reviewed similar records for the rated fire wraps to ensure the material possessed an appropriate fire rating and that the installation met the engineering design.

b. Findings

No findings were identified.

.3 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected fire areas. The team verified the automatic detection systems and the manual and automatic suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association code of record or approved deviations and that each suppression system was appropriate for the hazards in the selected fire areas.

The team performed a walkdown of accessible portions of the detection and suppression systems in the selected fire areas. The team also performed a walkdown of major system support equipment in other areas (e.g., fire pumps and halon supply systems) to assess the material condition of these systems and components.

The team reviewed the electric and diesel fire pump's flow and pressure tests to verify that the pumps met their design requirements. The team reviewed the yard loop flow and pressure drop tests. The team also reviewed the halon suppression functional tests to verify that the system capability met the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed pre-fire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. In addition, the team inspected fire brigade equipment to determine operational readiness for fire fighting.

The team observed an unannounced fire drill and subsequent drill critique on February 11, 2014, using the guidance contained in Inspection Procedure 71111.05AQ, "Fire Protection (Annual/Quarterly)." The team observed fire brigade members fight a simulated fire in the turbine-driven auxiliary feedwater pump room of Unit 1 Auxiliary Building (Fire Area SC). The team verified that the licensee identified problems, openly discussed them in a self-critical manner at the drill debrief, and identified appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient fire fighting equipment was brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

No findings were identified.

.4 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed plant walkdowns and document reviews to verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, would not be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified:

- a fire in one of the selected fire areas would not directly, through production of smoke, heat, or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains
- a fire in one of the selected fire areas or the inadvertent actuation or rupture of a fire suppression system would not directly cause damage to all redundant trains (e.g., sprinkler-caused flooding of other than the locally affected train)
- adequate drainage is provided in areas protected by water suppression systems

b. Findings

No findings were identified.

.5 Alternative Shutdown Capability

a. Inspection Scope

Review of Methodology

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings, electrical drawings, the Final Safety Analysis Report, and other supporting documents to verify that hot and cold shutdown could be achieved and maintained from outside the control room for fires that require evacuation of the control room, with or without offsite power available.

The team conducted plant walkdowns to verify that the plant configuration was consistent with the description contained in the safe shutdown and fire hazards analyses. The team focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor decay heat removal, process monitoring instrumentation, and support systems functions.

The team also verified that the systems and components credited for shutdown would remain free from fire damage. Finally, the team verified that the transfer of control from the control room to the alternative shutdown location would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

Review of Operational Implementation

The team verified that licensed and non-licensed operators received training on alternative shutdown procedures. The team also verified that sufficient personnel to perform a safe shutdown were trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team performed a walkdown of the post-fire safe shutdown procedure with licensed and non-licensed operators to determine the adequacy of the procedure. The team verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits. Time critical actions that were verified included restoring electrical power, establishing control at the remote shutdown and local shutdown panels, establishing reactor coolant makeup, and establishing decay heat removal.

The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to verify that the tests were adequate to demonstrate the functionality of the alternative shutdown capability.

b. Findings

No findings were identified.

.6 Circuit Analysis

a. Inspection Scope

The team reviewed the post-fire safe shutdown analysis to verify that the licensee identified the circuits that may impact the ability to achieve and maintain safe shutdown. The team verified, on a sample basis, that the licensee properly identified the cables for equipment required to achieve and maintain safe shutdown conditions in the event of a fire in the selected fire areas. The team verified that these cables were either adequately protected from the potentially adverse effects of fire damage or were analyzed to show that fire-induced circuit faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown. For cables that were important to safe shutdown, the team verified that the licensee's analysis considered potential spurious operations due to fire-induced cable faults.

The team's evaluation focused on the schematics and cables of selected components from the reactor coolant system, specifically the pressurizer power-operated relief and block valves, chemical volume and control system, auxiliary feedwater, residual heat removal system, and electrical distribution breaker controls and circuit coordination. For the sample of components selected, the team reviewed electrical elementary and block diagrams and identified power, control, and instrument cables necessary to support their operation. In addition, the team reviewed cable routing information to verify that fire protection features were in place as needed to satisfy the separation requirements specified in the fire protection license basis. Specific components reviewed by the team are listed in the attachment.

b. Findings

No findings were identified.

.7 Communications

a. Inspection Scope

The team inspected the contents of designated emergency storage lockers and reviewed the alternative shutdown procedure to verify that portable radio communications and fixed emergency communications systems were available, operable, and adequate for the performance of designated activities. The team verified the capability of the communication systems to support the operators in the conduct and coordination of their required actions. The team also verified that the design and location of communications equipment such as repeaters and transmitters would not cause a loss of communications during a fire. The team discussed system design, testing, and maintenance with the system engineer.

b. Findings

No findings were identified.

.8 Emergency Lighting

a. Inspection Scope

The team reviewed the portion of the emergency lighting system required for alternative shutdown to verify that it was adequate to support the performance of manual actions required to achieve and maintain hot shutdown conditions and to illuminate access and egress routes to the areas where manual actions would be required. The team evaluated the locations and positioning of the emergency lights during a walkdown of the alternative shutdown procedure.

The team verified that the licensee installed emergency lights with an 8-hour capacity, maintained the emergency light batteries in accordance with manufacturer recommendations, and tested and performed maintenance in accordance with plant procedures and industry practices.

b. Findings

No findings were identified.

.9 Cold Shutdown Repairs

a. Inspection Scope

The team verified that the licensee identified repairs needed to reach and maintain cold shutdown and had dedicated repair procedures, equipment, and materials to accomplish these repairs. Using these procedures, the team evaluated whether these components could be repaired in time to bring the plant to cold shutdown within the time frames specified in their design and licensing bases. The team verified that the repair equipment, components, tools, and materials needed for the repairs were available and accessible on site.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were implemented for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems and equipment; passive fire barriers; or pumps, valves, or electrical devices providing safe shutdown functions). The team also verified that the short-term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

The team reviewed operator manual actions credited for achieving hot shutdown for fires that do not require an alternative shutdown. The team verified that operators could

reasonably be expected to perform the actions within the applicable shutdown time requirements. The team reviewed these operator manual actions using the guidance contained in NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," dated October 2007.

b. Findings

No findings were identified.

.11 Review and Documentation of Fire Protection Program Changes

a. Inspection Scope

The team reviewed changes to the approved fire protection program. The team verified that the changes did not constitute an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed the licensee's approved fire protection program, implementing procedures, and programs for the control of ignition sources and transient combustibles. The team assessed the licensee's effectiveness in preventing fires and in controlling combustible loading within limits established in the fire hazards analysis. The team performed plant walkdowns to independently verify that transient combustibles and ignition sources were being properly controlled in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Alternative Mitigation Strategy Inspection Activities

a. Inspection Scope

The team reviewed the licensee's implementation of guidance and strategies intended to maintain or restore core, containment, and spent fuel pool cooling capabilities under the circumstances associated with the potential loss of large areas of the plant due to explosions or fire as required by 10 CFR 50.54(hh)(2).

The team verified that the licensee maintained and implemented adequate procedures, maintained and tested equipment necessary to properly implement the strategies, and ensured station personnel were knowledgeable and capable of implementing the procedures. The team performed a visual inspection of portable equipment used to implement the strategy to ensure the availability and material readiness of the equipment, including the adequacy of portable pump trailer hitch attachments, and verify

the availability of on-site vehicles capable of towing the portable pump. The team assessed the ability to obtain fuel for the portable pump and sampled various equipment storage lockers to verify required equipment was available for use. The strategy and procedure selected for this inspection sample included:

- Extreme Damage Mitigation Guideline A.4-4, "Manually Depressurize S/Gs and Use Portable AME Pump for Makeup," Revision 6

One sample was completed.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team selected a sample of condition reports and operating experience reviews associated with the licensee's fire protection program to verify that the licensee had an appropriate threshold for identifying deficiencies. The team reviewed the corrective actions proposed and implemented to verify that they were effective in correcting identified deficiencies. The team evaluated the quality of recent engineering evaluations through a review of condition reports, calculations, and other documents during the inspection. The team evaluated two items in this section:

1. The team performed a review of the licensee's response to Information Notice 1992-18, "Potential Loss of Remote Shutdown Capability Following Control Room Fire," and determined a licensee identified violation occurred. This violation is documented in Section 4OA7.
2. During the 2008 triennial fire protection inspection, the team identified a concern with the potential loss of the charging pump relied upon for an alternative shutdown due to a loss of suction. Specifically, the team was concerned that the spurious closure of one of the volume control tank outlet valves (LCV-112B or LCV-112C) prior to the opening of one of the refueling water storage tank outlet valves (LCV-112D or LCV-112E) would result in a loss of suction and loss of the charging pump. The team documented this issue as Unresolved Item 05000445/2008006-01 for Unit 1 and 05000446/2008006-02 for Unit 2 on July 3, 2008. This unresolved item was subsequently closed as non-cited violation NCV 05000445/2009004-04; 05000446/2009004-04, "Inadequate Postfire Safe Shutdown Procedure."

As a corrective action for this violation, the licensee designed plant modifications (FDA-2010-000172-63 for Unit 1 and FDA-2010-000172-64 for Unit 2) to:

- install hot short prevention cable in the control room and cable spreading

room for all four valves

- install new control switches at the hot shutdown panel and shutdown transfer panel for valves LCV-112B and LCV-112D to allow control of these valves from the hot shutdown panel
- reconfigure the control circuits for the valves to comply with the requirements of Information Notice 1992-18
- remove the 3-hour cable in the power and control circuits for LCV-112B

This modification was originally scheduled to be completed in 2014 during the spring outage for Unit 2 and the fall outage for Unit 1. On February 7, 2014, the licensee made a decision to delay the modification for Unit 2 from Refueling Outage 14 to Refueling Outage 15. The licensee documented this decision in condition report CR-2014-001506. This condition report provided the following information for delaying the modification:

The complexity and breadth of this modification coupled with corrective actions from recent plant events led to late development of work orders and test procedures resulting in a significant impact on producing quality, complete, and impacted work orders for field implementation required to support station outage milestones. Deferral of this modification provides the station time to properly assess and address risk factors to assure final implementation meets all station requirements.

The team noted that the recent plant events referred to in this condition report occurred on December 4, 2013, and were described in Licensee Event Notification 49606, condition report CR-2013-012287, and Licensee Event Report 05000445/2013-003-00.

The team reviewed the licensee's rationale for delaying the Unit 2 modification. The team concluded that it was reasonable to delay the modification in order to give the licensee time to implement corrective actions associated with the modification process.

The team determined that a performance deficiency existed because the corrective actions for the original fire protection violation (NCV 05000445/2009004-04; 05000446/2009004-04) were untimely. Specifically, the team determined that the corrective actions were untimely since the violation has existed for more than six years and the licensee has yet to correct and restore compliance for Unit 2. The enforcement aspect of this performance deficiency will be documented in a future NRC Inspection Report with the closure of Licensee Event Report 05000445/2013-003-00 since the underlying cause of the delay was associated with problems with the modification process that manifested themselves during the December 4, 2013, event.

b. Findings

No findings were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

(Closed) Licensee Event Report 05000446/2013-001-00, "Unit 2 Hot Shutdown Panel Transfer Switch Inoperable Due to Wiring Error"

a. Inspection Scope

The licensee event report documented wiring errors during implementation of hot shutdown panel control transfer switch modifications. The inspectors performed a review of the event. The inspectors examined written procedures, electrical drawings, condition reports, and the licensee's root cause evaluation.

b. Findings

Introduction. The team reviewed a Green, self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to ensure that procedures provide adequate guidance for labeling and terminating cables during circuit modifications. Specifically, procedure CMP-EL-1006, "Cable Terminations," Revision 3, did not prescribe the appropriate human performance standards and cable label controls when installing new cable.

Description. On January 6, 2013, the licensee performed a surveillance test of the Unit 2 hot shutdown panel. During this test, transfer/isolation switch 2-HS-2452D, "Auxiliary Feedwater Pump Turbine Main Steam Line 1 Supply Valve Control Transfer," was placed in the "HSP" position. This caused the turbine-driven auxiliary feedwater pump steam supply valve, 2-HV-2452, to unexpectedly open when it should have remained closed. After declaring the hot shutdown panel inoperable, the licensee performed troubleshooting efforts which revealed that incorrect wiring, due to incorrect cable labeling, was the cause of the event. The incorrect wiring occurred during the previous outage in October 2012 and the post-modification testing failed to identify the error. The licensee performed a root cause evaluation, documented in condition report CR-2013-000140 and corrected the cable labeling and wiring to restore the hot shutdown panel to operable.

The team reviewed the licensee's root cause evaluation which determined the root cause to be an inadequate modification procedure, CMP-EL-1006, which has existed since 1995. The evaluation concluded that this procedure failed to provide controls for removal, replacement, and verification of cable labels. The evaluation also identified several contributing causes associated with engineering and operations post-work testing training, management ownership of the construction procedure, and inaccurate methods for quality control inspections. The wiring error caused one of the two turbine-driven auxiliary feedwater pump steam supply valves to fail open when the hot shutdown panel transfer/isolation switch was taken to the remote position. The valve failed to its safety position and would not have prevented the turbine-driven pump from performing its safe shutdown function. The redundant steam supply valve was unaffected by the wiring error.

The team determined that this issue had a cross-cutting aspect that was indicative of current plant performance. An open action to address a procedure change was

captured in condition report CR 2010-007615, which was extended three times from December 2011 through December 2012, consequently the licensee had multiple opportunities to foresee and correct the procedure deficiencies.

The licensee entered this into the corrective action program as condition report CR-2013-000140. The corrective actions included: confirming that the same error did not exist for the other steam supply valve or for the Unit 1 transfer switch, retiring procedure CMP-EL-1006 and revising other maintenance section generic procedures that will be used to implement future circuit modifications.

Analysis. The licensee's failure to ensure that procedures provide adequate guidance for labeling and terminating cables during circuit modifications was a performance deficiency. The finding was more than minor because if left uncorrected this could have the potential to lead to a more significant safety concern. Specifically, because operation of the hot shutdown panel auxiliary feedwater transfer/isolation switch cannot be reliably performed. Using NRC Inspection Manual Chapter 0609, Appendix F, Attachment 1, "Part 1: Fire Protection SDP Phase 1 Worksheet," dated September 30, 2013, the finding was determined to be of very low safety significance (Green), by answering Step 1.3.1, Question 2, because the finding did not affect the reactor to be able to reach and maintain a safe shutdown condition. The finding had a human performance cross-cutting aspect in resources because leaders failed to ensure that personnel and procedures were available and adequate to support nuclear safety.[H.1]

Enforcement. Title 10 of the *Codes of Federal Regulation* Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, 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, from 1995 to 2013, the licensee failed to ensure that activities affecting quality were prescribed by documented instructions, procedures, or drawings and were accomplished in accordance with the instructions, procedures, or drawings. Specifically, procedure CMP-EL-1006, "Cable Terminations," Revision 3, did not prescribe the appropriate cable label controls when installing new cable. Since the violation was of very low safety significance and was documented in the licensee's corrective action program as condition report CR-2013-000140, it is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC enforcement Policy: NCV 05000446/2014008-01, "Failure to Update Procedures for Cable Label Controls."

4OA5 Other Activities

(Closed) Unresolved Item 05000445/2013004-06; 05000446/2013004-06, "Potential Motor-Operated Valve Single Spurious Operation Vulnerability"

On November 6, 2013, inspectors identified a concern and documented an unresolved item associated with the potential vulnerability of motor-operated valves to fire-induced single spurious operations. Specifically, the inspectors were concerned that a single hot short could cause the spurious operation of motor-operated valves and bypass their torque/limit switch, resulting in potential damage to the pressure boundary.

The licensee had previously entered this issue into their corrective action program as

condition report CR-2010-007806 and implemented compensatory measures. As a corrective action for this issue, the licensee chose to perform modifications on 60 motor-operated valves. Since the licensee implemented compensatory measures and developed corrective actions that would resolve the concern, the licensee decided not to perform an evaluation at the time in order to determine if the spurious operation of the motor-operated valves could result in damage to the pressure boundary.

In response to the unresolved item, the licensee evaluated the possibility that the spurious operation of the motor-operated valves could result in damage to the pressure boundary. The licensee evaluated 252 motor-operated valves and determined that six valves were susceptible to damage (e.g., the valves could be damaged due to the failure of the main flange bolting or the bonnet flange), but the damage was not sufficient to damage the pressure boundary.

During this inspection, the inspectors reviewed the licensee's evaluation. The inspectors determined that the licensee appropriately evaluated the possibility that the single spurious operation could damage the pressure boundary. Because the six valves in question were not relied upon for post-fire safe shutdown in the fire areas of concern, the team concluded that there was no impact on the ability to achieve and maintain safe shutdown. Therefore, no performance deficiency exists.

This unresolved item is closed.

40A6 Meetings, Including Exit

Exit Meeting Summary

The team presented the inspection results to Mr. Ben Mays, Assistant to the Chief Nuclear Officer, and other members of the licensee's staff at an initial exit meeting on February 13, 2014. All members present acknowledged the findings presented.

On March 19, 2014, the inspection team lead discussed an update to the inspection results with Mr. Tim Hope, Nuclear Licensing Manager. All proprietary information has been discarded.

40A7 Licensee-Identified Violations

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 Section 2.3.2.a of the NRC Enforcement Policy, to disposition it as a non-cited violation.

License Condition 2.G requires the licensee to 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 (NUREG-0797) and its supplements through SSER 24 for Unit 1, and through Amendment 87 and as approved in the Safety Evaluation Report (NUREG-0797) and its supplements through SSER 27 for Unit 2. Section 13.3B.5 of the Final Safety Analysis Report describes the fire protection quality assurance program, which requires, in part, that measures be established to ensure that design and procurement document changes are subject to the same controls that were applicable to the original design. Contrary to the above, from 1999 through 2005, the licensee failed to update Attachment Y of

Calculation ME-CA-0000-1093, "Design data for CPSES Unit 1, 2, Common Safety-related Motor-Operated Valves (MOV) within the scope of NRC Generic Letter 89-10," Revision 25, when making changes to the motor-operated valve gear ratios for motor-operated valves credited in the fire safe shutdown analysis. The licensee initially identified and documented this violation in condition report CR-2011-002717. The violation was of very low safety significance because it does not affect the ability to reach and maintain a stable plant condition within the first 24 hours, per Inspection Manual Chapter 0609, Appendix F, Attachment 1, "Part 1: Fire Protection SDP Phase 1 Worksheet," dated September 30, 2013, Task 1.4.5 Question B.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Acosta	Electrical/I&C Engineering Modification Manager
F. Ames	Maintenance Supervisor
H. Beck	Fire Safe Shutdown Analysis Engineer
G. Bryan	Unit Supervisor-Accident Mitigation SME
C. Gibson	CB&I Consultant
J. Hammons	MT22 Electrician
J. Hicks	Regulatory Affairs
T. Hope	Nuclear Licensing Manager
B. Mays	Assistant to the CNO
J. McGaha	MT22 Electrician
M. Montellano	Nuclear Equipment Operator
R. Plunkett	Fire Protection Engineer
L. Slaughter	Cause Analyst
J. Squires	MT27 Electrician
M. Wisdom	Fire Protection System Engineer
L. Zimmerman	Procurement Engineering & Engineering Programs Manager

NRC Personnel

J. Dixon, Acting Branch Chief, Engineering Branch 2
J. Kramer, Senior Resident Inspector
R. Kumana, Resident Inspector
G. Miller, Acting Deputy Director, Division of Reactor Safety
F. Sanchez, Senior Resident Inspector, South Texas Project

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000446/2014008-01	NCV	Failure to Update Procedures for Cable Label Controls (Section 4OA3)
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Closed

05000445/2013004-06; 05000446/2013004-06	URI	Potential Motor-Operated Valve Single Spurious Operation Vulnerability (Section 4OA5)
05000446/2013-001-00	LER	Unit 2 Hot Shutdown Panel Transfer Switch Inoperable Due to Wiring Error (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

CALCULATIONS

<u>Number</u>	<u>Title</u>	<u>Revision</u>
0210-063-0002	As-Built Combustible Loading Calculation Unit 1 Safeguards Building	014
0210-063-0012	Hose Station Coverage Calculation	002
0210-063-0035	Emergency Communication Systems Availability	001
0210-063-0051	Smoke Removal Calculation	001
225-10	Fire Protection Yard Piping Pressure Drop (Gibbs & Hill)	001
2-EE-0051	Emergency Communication Systems Availability – CPSES Unit 2	000
CN-TA-07-88	Fire Safe Shutdown Analysis for 3612 MWt Power Uprate	002
CS-CA-0000-3262	Seismic Qualification of Electrical and Mechanical Equipment	000
EE-CA-0008-157	Coordination Study of 6.9 kV Power Distribution System	003
ER-ME-125	Thermal / Hydraulic Analysis of the Fire Safe Shutdown Scenario	001
ME-CA-0000-1086	Fire Safe Shutdown Analysis for CPSES Unit 1, Unit 2, and Common	002

CONDITION REPORTS

2008-000311	2011-001836	2013-005889	2014-001084*
2008-000324	2011-002581	2013-007927	2014-001091*
2008-000488	2011-002717	2013-007964	2014-001093*
2009-003415	2011-012603	2013-008873	2014-001109*
2010-005052	2012-000050	2013-008875	2014-001127*
2010-006501	2013-000140	2013-008908	2014-001135*
2010-007615	2013-001238	2013-008910	2014-001204*
2010-007806	2013-002903	2013-012701	2014-001248*
2011-001318	2013-003039	2014-000844*	2014-001310*
2011-001647	2013-003180	2014-000998*	2014-001312*
2011-001742	2013-004082	2014-001061*	2014-001492*
2011-001821	2013-005314	2014-001062*	2014-001495*

2014-001506*
2014-001541*

2014-001564*
2014-001566*

2014-001568*
2014-001614*

2014-001629*

*Issued as a result of inspection activities.

DESIGN BASIS DOCUMENTS

<u>Number</u>	<u>Title</u>	<u>Revision</u>
DBD-EE-048	Communication System	016
DBD-EE-057	Separation Criteria	029
DBD-ME-001	CPSES Fire Protection Program	008
DBD-ME-002	Penetration Seals	010
DBD-ME-020	Fire Safe Shutdown Analysis	013
DBD-ME-063	Fire Barriers	006
DBD-ME-104	Fire Detection System	015
DBD-ME-225	Fire Suppression System	020

DRAWINGS

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E1-0004	6.9 kV Auxiliaries One Line Diagram Safeguards Buses	CP-38
E1-0018, Sh. 1	208/120V AC, One Line Diagram	CP-47
E1-0018, Sh. 1A	208/120V AC, One Line Diagram	CP-16
E1-0018, Sh. 1B	208/120V AC, One Line Diagram	CP-31
E1-0018, Sh. D	118V AC, Instrument Bus Distribution, One Line Diagram	CP-26
E1-0018, Sh. F	118V AC, Instrument Bus Distribution, One Line Diagram	CP-19
E1-0020, Sh. B	125V DC, One Line Diagram	CP-18
E1-0020, Sh. H	125V DC, One Line Diagram	CP-16
E1-0031, Sh. 01	6.9 kV Switchgear Bus 1EA1 Start-up Breaker 1EA1-1 Schematic Diagram	CP-9

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E1-0031, Sh. 03	6.9 kV Switchgear Bus 1EA1 Breaker 1EA1-2 Schematic Diagram	CP-16
E1-0038, Sh. 52A	Steam Generator FW, Miscellaneous Switches	CP-6
E1-0061, Sh. 01	Motor Operated Valve 1-8100 Reactor Coolant Pump Seal Water Isolation	CP-5
E1-0061, Sh. 02	Motor Operated Valve 1-8105 Charging Pump to Reactor Coolant System Isolation	CP-4
E1-0061, Sh. 04	Motor Operated Valve 1-8110 Charging Pump Miniflow Isolation	CP-9
E1-0061, Sh. 05	Motor Operated Valve 1-8111 Charging Pump Miniflow Isolation	CP-8
E1-0061, Sh. 06	Motor Operated Valve 1-8112 Reactor Coolant Pump Seal Water Isolation	CP6
E1-0061, Sh. 19	Air Operated Valve 1-LCV-0459 Letdown Isolation Line Valve	CP-7
E1-0061, Sh. 20	Air Operated Valve 1-LCV-0460 Letdown Isolation Line Valve	CP-6
E1-0061, Sh. 30	Air Operated Valve 1-8153 Excess Letdown Line Isolation	CP-8
E1-0061, Sh. 31	Air Operated Valve 1-8154 Excess Letdown Line Isolation	CP-8
E1-0061, Sh. 36	Air Operated Valve 1-8149A Letdown Orifice Isolation	CP-7
E1-0061, Sh. 37	Air Operated Valve 1-8149B Letdown Orifice Isolation	CP-9
E1-0061, Sh. 38	Air Operated Valve 1-8149C Letdown Orifice Isolation	CP-6
E1-0061, Sh. 40	Air Operated Valve 1-8152 Letdown Line Isolation	CP-2
E1-0061, Sh. 86	Air Operated Valve 1-8160 Letdown Line Isolation	CP-7
E1-0062, Sh. 05	Motor Operated Valve 1-8801A Charging Pumps Safety Injection Header Isolation	CP-5

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E1-0062, Sh. 22	Motor Operated Valve 1-8811A Sump to Number 1 Residual Heat Removal Pump Schematic/Ext Conn Diagram	CP-8
E1-0062, Sh. 24	Motor Operated Valve 1-8812A Refueling Water Storage Tank to RHR Pump 1 Isolation Schematic/Ext Conn Diagram	CP-6
E1-0063, Sh. 7	Motor Operated Valve 1-8716A Residual Heat Removal Cross Connect	CP-4
E1-0064, Sh. 1	Motor Operated Valve 1-8000A Pressurizer Relief Isolation Valve	CP-8
E1-0064, Sh. 02	Motor Operated Valve 1-8000B Pressurizer Relief Isolation Valve	CP-8
E1-0064, Sh. 11	Nitrogen Operated Valve 1-PCV-0455A Pressurizer Power Relief Valve	CP-8
E1-0064, Sh. 12	Nitrogen Operated Valve 1-PCV-0456 Pressurizer Power Relief Valve	CP-8
E1-0197, Sh. 2D	Feedwater Pump 1A and 1B, Digital Control Panel CP1-FWECLP-01, Interconnection Diagram	CP-6
E1-0901	Lighting System, Lighting One Line Diagram, Safeguards Building	CP-24
E1-0911, Sh. L	Safeguards Building Lighting Maintenance Plan El. 810'-6"	CP-1
E1-0911, Sh. T	Safeguards and Diesel Generator Buildings Emergency Lighting Plan El. 810'-6"	CP-4
E1-0916, Sh. 1T	Control Building, Emergency Lighting Plan, EL 778'-0"	CP-2
E1-0916, Sh. 2T	Control Building Battery Rooms, Emergency Lighting Plan, EL 792'-0"	CP-5
E1-0940, Sh. T	Safeguards and Diesel Generator Buildings, Emergency Lighting Plan, EL 831'-6" and 844'-0"	CP-4
E1-2001, Sh. D	Miscellaneous Systems, One Line Diagram, PNL XEC2-7	CP-2

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E2-0031, Sh. 53	6.9 kV Switchgear Bus 2EA1 Centrifugal Charging PP 22 Tag TCX-CSAPCH-02 Bkr 2APCH2 Schematic Diagram	CP-5
E2-0031, Sh. 55	6.9 kV Switchgear Bus 2EA2 Centrifugal Charging Pump 21 Tag TCX-CSAPCH-01 Bkr 2APCH1 Schematic Diagram	CP-5
E2-0061, Sh. 66	Motor Operated Valve 1-8351A Seal Water Injection Isolation	CP-5
M1-0202	Flow Diagram Main Steam Reheat and Steam Dump	CP-33
M1-0203	Flow Diagram, Steam Generator, Feedwater System	CP-29
M1-0204, Sh. 3	Flow Diagram, Condensate System	CP-20
M1-0225	Flow Diagram Fire Protection System	CP-22
M1-0225, Sh. 1	Flow Diagram Turbine Building Unit 1 Fire Protection	CP-12
M1-0225, Sh. 2	Flow Diagram Auxiliary Building Fire Protection	CP-22
M1-0225, Sh. 3	Flow Diagram Safeguard Building Unit 1 Fire Protection	CP-9
M1-0225, Sh. 3	Flow Diagram Safeguard Building Unit 1 Fire Protection	CP-15
M1-0225, Sh. 3A	Flow Diagram Safeguard and Diesel Generator Buildings Unit 1 Fire Protection	CP-8
M1-0225, Sh. 4	Flow Diagram Fuel Building Fire Protection	CP-12
M1-0225, Sh. 4A	Flow Diagram Electric Control Building Fire Protection	CP-14
M1-0225, Sh. 5	Flow Diagram Containment Building Unit 1 Fire Protection	CP-12
M1-0250	Flow Diagram, Reactor Coolant System	CP-34
M1-0253	Flow Diagram Chemical and Volume Control System	CP-21
M1-0253, Sh. A	Flow Diagram Chemical and Volume Control System	CP-10
M1-0255	Flow Diagram Chemical and Volume Control System Volume Control Tank Loop	CP-28

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M1-0261	Flow Diagram Safety Injection System Sheet 1 of 5	CP-22
M1-0263, Sh. B	Flow Diagram Safety Injection System Sheet 5 of 5	CP-14
M1-1700	Thermolag and Res Schedule	CP-5
M1-1920, Sh. 1	Fire Hazard Analysis Unit Containment and Safeguards Buildings Plan at El. 790'-6"	CP-3
M1-1927, Sh. 1	Fire Hazard Analysis Unit 1 Auxiliary/Electrical Control Building El. 778'-0" and El. 790'-6"	CP-5
M1-1927, Sh. 1A	Fire Hazard Analysis Unit 1 Auxiliary and Electrical Control Building Partial plan El. 792'-0"	CP-3
M1-1928, Sh. 1	Fire Hazard Analysis Auxiliary and Electrical Control Building El. 807'-0" and El. 810'-6"	CP-3
M2-0225, Sh. 1	Flow Diagram Turbine Building Fire Protection	CP-13
M2-0225, Sh. 2A	Flow Diagram Auxiliary Building Fire Protection	CP-13
M2-0225, Sh. 3	Flow Diagram Safeguard Building Unit 2 Fire Protection	CP-10
M2-0225, Sh. 3A	Flow Diagram Diesel Generator Building Unit 2 Fire Protection	CP-5
M2-0225, Sh. 5	Flow Diagram Containment Building Unit 2 Fire Protection	CP-6
M2-1920, Sh. 1	Fire Hazard Analysis Unit Containment and Safeguard Buildings Plan at El. 790'-6"	CP-4
MX-0225, Sh. 10	Flow Diagram With Valve Arrangements	CP-9
MX-0225, Sh. 7	Flow Diagram Fire Protection Treated Water Supply System	CP-16
MX-0225, Sh. 8	Flow Diagram Fire Protection Treated Water Supply System	CP-11
SK-0001-10-000172-48-01	Motor Operated Valve 1-8716A Residual Heat Removal Cross Connect	001

EVALUATIONS

<u>Number</u>	<u>Title</u>	<u>Date</u>
EV-CR-2011-008909-5	SER Equivalency Evaluation	November 21, 2013
EV-CR-2013-003882-1	HEMYC Fabrication	August 14, 2013
EV-CR-2014-000844-2	CPNPP Fire Pump Testing	February 12, 2014
EV-CR-2014-1084	Fire Piping Yard Loop Flow	February 11, 2014

MISCELLANEOUS DOCUMENTS

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>/Date</u>
2323-ES-100	Electrical Installation	104
2323-MI-0750	Ventilation Auxiliary Building Plan EL. 778'-0"	008
CDF 17923	Commitment Data Form Report PLCT004	October 5, 2001
CDF 17930	Commitment Data Form Report PLCT004	October 27, 1998
CP-201301082	MOU between Luminant Generation Company LLC and Air Evac EMS, Inc. dated June 24, 2010	Augusts 28, 2013
DR C-89-1903	Deficiency Report Regarding Fire Pump Testing Interval Frequency	000
GENESIS Database	Cable and Raceway Database for the Sampled Fire Areas	
PCI-FD-CPX-VADPFD-103	Installation Details For Fire Dampers	002
PCI-FD-CPX-VADPFD-113	Installation Details For Fire Dampers	002
SG-001	Emergency Planning Writers Guide	019

WPT-15195	Westinghouse Letter: Motor Operated Valves	June 16, 1993
CPF-07772-001	Emergency Lighting	006
	Operating Limits of a Enterprise DSRV-16-4 Engine Loaded to ≤ 800 kW With No Service Water Flow, Comanche Peak, Unit S/N's 76001, 76002, 76003, 76004	October 25, 2007

MODIFICATIONS

92-071	2008-000324-03	2010-000172-28	2010-000172-51
2008-000324-01	2010-000172-07	2010-000172-38	2010-000172-51
2008-000324-02	2010-000172-21	2010-000172-64	

PROCEDURES

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-104	Residual Heat Removal System Malfunction	009
ABN-301	Instrument Air System Malfunction	012
ABN-601	Abnormal Conditions Procedures Manual	012
ABN-803A	Response To A Fire In The Control Room Or Cable Spreading Room	011
ABN-804A	Response to Fire in the Safeguards Building	005
ABN-804B	Response to Fire in the Safeguards Building	003
ABN-805A	Response to Fire in the Auxiliary Building or the Fuel Building	007
ABN-806A	Response to Fire in the Electrical and Control Building	007
ABN-808A	Response to Fire in Service Water Intake Structure	005
ABN-901	Fire Protection System Alarms or Malfunctions	009
ECE 5.01-08	Electronic Design Change Process	001
ECE 5.01-08	Electronic Design Change Process	019
ECE-5.01	Design Control Program	024

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EDMG-A.4-4	Manually Depressurize S/Gs and Use Portable AME Pump for Makeup	006
EOP-0.0A	Reactor Trip or Safety Injection	008
EPG-3.01	Electronic Data Management System (EDMS)	005
FIR-201	Preparation, Control, Review and Use of Fire Preplan Instructions	009
FIR-202	Fire Protection Inspections	005
FIR-301	Portable Fire Extinguisher Inspection, Maintenance, Recharging, and Hydrostatic Testing	005
FIR-302	Fire Door Tests and Inspections	007
FIR-303	Halon Fire Suppression System Inspection	005
FIR-307	Inspection of Sprinkler Systems	003
FIR-308	Fire Brigade Equipment	004
FIR-309	Hose Station and Hydrant/Hose House Inspections	004
FIR-310	Penetration Seal Inspection	003
FIR-311	Fire Rated Assembly Visual Inspection	002
FIR-312	Hydrostatic Testing of Fire Hose	001
FIR-P1-3115	Deluge Valves 1-HV-4113M, R, Q Unit 1 Safeguards Building Train A/B Switchgear Rooms and Electrical Equipment Room	001
FIR-PX-3200	Fire Suppression Loop Flow Test	003
FIR-PX-3203	Fire Protection Pump CPX-FPAPFP-01 Emergency Fill Flow Test	003
FIR-PX-3601	Fire Hydrant Yearly Flow Test	001
FIR-PX-3801	Electric Driven Fire Protection Pump CPX-FPAPFP-04 Operability Test	004
FIR-PX-3802	Diesel Driven Fire Protection Pump CPX-FPAPFP-05 Operability Test	004

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FPI-102A	Unit 1 Safeguards Building Elevation 790'-0"	003
FPI-103A	Unit 1 Safeguards Building Elevation 810'-6" Rad, Penetration Area and Electrical Equipment Room	003
FPI-501	Electrical & Control Building Control Room Elevation 778'-0"	004
FPI-506	Electrical & Control Building Control Room Elevation 830'-0"	004
FPI-701	Service Water Intake Structure Elev. 796'-0" & 810'-6"	003
FPI-702	Fire Water Pumphouse	001
FPI-901	Protected Area Yard, Main FP Underground Loop and Supplies	002
MSE-P0-5306	Emergency Lighting Unit Inspection	008
MSE-CO-7334	Testing Fenwal Fire Detection Unit	002
MSE-CO-7335	Ionization Detector Sensitivity Test and Visual Check	003
MSE-CX-6003	Fire Water Pump House 480 V Motor Control Center XB38-1 (CPX-EPMCNCB-53) Temporary Power	000
MSE-GO-7700	Fire Protection System Troubleshooting	001
MSE-P1-7702	Fire Protection Control Panel test CP1-EIPRLV-33	003
MSE-P1-7703	Fire Protection Control Panel test CP1-EIPRLV-33A	003
MSE-P1-7704	Halon Fire System Test CPX-EIPRLV-42	003
MSE-PX-4011	Fire Pump Motor Inspection	001
MSE-PX-5004	Pump House Battery Inspection	002
MSE-PX-7715	Halon Fire System Test CPX-EIPRLV-44A	002
MSM-C0-7316	Diesel Engine Driven Fire Pump Maintenance	002
MSM-CO-1856	Grinnell Strainer Maintenance (Models A and B-1)	002
MSM-CO-7318	Electric Motor Driven Fire Pump X-04 Maintenance	000

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MSM-PO-0705	Fire Damper Inspection and Cleaning	003
MSM-PX-4702	Fire Pump Diesel Engine Preventive Maintenance (CPX-FPAPFP-05D and CPX-FPAPFP-06D)	002
OPT-216A	Remote Shutdown Operability Test	013
OWI-201-35	Accident Mitigation Equipment Periodic Review	R-4
OWI-203	Operations Department Management Periodic Reviews	013
OWI-203-19	Emergency Use Job Aids/Tools Periodic Review (Unit 1)	R-18
SOP-904	Fire Protection Main Water Supply and Fire Pumps System	016
STA-214	Timed Operator Action Program	002
STI-214.01	Control of Timed Operator Actions	000
STA-421	Initiation of Condition Reports	019
STA-422	Processing Condition Reports	031
STA-426	Industry Operating Experience Program	007
STA-426.03	Processing Noteworthy OE (NOE)	000
STA-606	Control of Maintenance and Work Activities	032
STA-606	Control of Maintenance and Work Activities	032
STA-722	Fire Protection Program	007
STA-723	Fire Protection Systems/Equipment Requirements	005
STA-724	Fire Reporting and Response	003
STA-727	Fire Brigade	005
STA-728	Storage and Handling of Flammable/Combustible Material and Compressed/Cryogenic Gases	004
STA-729	Control of Transient Combustibles, Ignition Sources and Fire Watches	011

STA-738	Fire Protection Systems/Equipment Impairments	007
STI-606.01	Work Control Process	000
TRA-104	Fire Protection Training	015

WORK ORDERS

3889306	4230390	4398528	4576864
3944733	4300544	4400089	4782303
4097224	4333534	4452277	
4195438	4350894	4463866	