



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

April 24, 2009

Rafael Flores, Senior Vice President  
and Chief Nuclear Officer  
Luminant Generation Company, LLC  
Comanche Peak Steam Electric Station  
P.O. Box 1002  
Glen Rose, TX 76043

Subject: COMANCHE PEAK STEAM ELECTRIC STATION - NRC INTEGRATED  
INSPECTION REPORT 05000445/2009002 AND 05000446/2009002

Dear Mr. Flores:

On March 21, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Steam Electric Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on March 26, 2009, with Mr. M. Lucas, Site Vice President, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents two NRC identified findings and one self-revealing finding of very low safety significance (Green). Two of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the noncited violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Comanche Peak Steam Electric Station facility. In addition, if you disagree with the characterization of 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 Inspector at the Comanche Peak Steam Electric Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

Sincerely,

*/RA/*

Wayne C. Walker, Chief  
Project Branch A  
Division of Reactor Projects

Docket: 50-445: 50-446  
License: NPF-87; NPF-89

Enclosure:  
NRC Inspection Report 05000445/2009002 and 005000446/2009002  
w/Attachment: Supplemental Information

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 50-445, 50-446

License: NPF-87, NPF-89

Report: 05000445/2009002 and 05000446/2009002

Licensee: Luminant Generation Company LLC

Facility: Comanche Peak Steam Electric Station, Units 1 and 2

Location: FM-56, Glen Rose, Texas

Dates: January 1 through March 21, 2009

Inspectors: J. Kramer, Senior Resident Inspector  
B. Tindell, Resident Inspector  
G. Pick, Senior Reactor Inspector, Engineering Branch 2  
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Accompanied by:  
C. Smith, Reactor Inspector  
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Approved By: Wayne Walker, Chief, Project Branch A  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000445/2009002, 05000446/2009002; 01/01/2009 - 03/21/2009; Comanche Peak Steam Electric Station, Units 1 and 2, Integrated Resident and Regional Report; Maintenance Risk Assessments and Emergent Work Control, Operability Evaluations, and Event Follow-up.

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region based inspectors. Two Green noncited violations and one Green finding of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. 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 Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a finding for the failure to follow housekeeping guidance in Procedure STA-607, "Housekeeping Control," Revision 19. Specifically, the licensee failed to remove several pieces of thin scrap sheet steel approximately five feet long and one foot wide from the Unit 1 diesel generator building roof following maintenance. As a result, the material could have affected the offsite power supply to safety-related electrical busses if high winds carried it on to nearby transmission lines. The inspectors determined that the material was on the rooftop during periods of severe weather. The licensee entered the finding into their corrective action program for resolution as Smart Form SMF-2008-004000.

The finding was more than minor because it was associated with the initiating events cornerstone attribute of protection against external factors and affected the cornerstone objective, in that, it increased the likelihood of an event that would upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1- Initial Characterization and Screening of Findings," the finding screened as very low safety significance (Green) because the condition did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. The cause of this finding was related to the Human Performance crosscutting component of work control, in that, the licensee failed to appropriately coordinate work activities [H3.b] (Section 1R13).

- Green. A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for the failure of operators to follow procedural requirements when reducing turbine load. As a result, operators transposed two digits and inadvertently reduced turbine load from 1273.7 megawatts to 1237.5 megawatts instead of 1273.5 megawatts. In response to the transient, the control rods automatically inserted approximately 17 steps to maintain programmed reactor coolant system temperature. The licensee entered the finding into their corrective action program as Smart Form SMF-2009-000028.

The finding was more than minor because it was associated with the human performance attribute of the initiating events cornerstone, and directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it did not contribute to the likelihood of mitigating equipment being unavailable. The cause of the finding was related to the Human Performance crosscutting component of work practices for the failure to use self and peer checking techniques [H4.a] (Section 4OA3.2).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for failure to follow procedures that require initiating a Smart Form for damage to safety-related equipment. The licensee discovered a bent shutter pin in the internal racking mechanism of a safety-related circuit breaker during maintenance. However, because the condition was not entered into the Smart Form database, the licensee failed to correct the cause of the condition and formally evaluate the impact of the condition on all of the associated 480 volt breakers. The licensee entered the finding into their corrective action program as Smart Form SMF-2009-000095.

The finding was more than minor because if the licensee continues to fail to document damage to safety-related equipment in a Smart Form, there is potential that it could lead to a more significant safety concern in that the damage will not be evaluated and corrected. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1- Initial Characterization and Screening of Findings," the finding screened as very low safety significance (Green) because the condition did not result in the inoperability of safety-related breakers when they were required to be operable. The cause of this finding was related to the Problem Identification and Resolution crosscutting component of the corrective action program, in that, the licensee failed to enter the issue into the Smart Form database [P1.a] (Section 1R15).

**B. Licensee-Identified Violations**

None

## REPORT DETAILS

### Summary of Plant Status

Comanche Peak Steam Electric Station Unit 1 operated at approximately 100 percent power for the entire reporting period.

Comanche Peak Steam Electric Station Unit 2 operated at approximately 100 percent power for the entire reporting period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R04 Equipment Alignments (71111.04)

##### Partial Equipment Walkdowns

##### a. Inspection Scope

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

- Unit 2 Train A motor driven auxiliary feedwater system while the Unit 2 Train B motor driven auxiliary feedwater system was unavailable during maintenance on January 16, 2009
- Unit 2 safety injection Pump 2-01 while safety injection Pump 2-02 was unavailable for maintenance on March 9, 2009
- Unit 2 Train B emergency diesel generator following skid ladder modification on March 10, 2009

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Final Safety Analysis Report, Technical Specification requirements, outstanding work orders, Smart Forms, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of three partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

**1R05 Fire Protection (71111.05)**

Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns in the following risk-significant plant areas:

- Fire Area EC, Unit 1 Train B Inverter Room on January 27, 2009
- Fire Zone 2SB1A, Unit 2 Train B Emergency Core Cooling Pump Rooms on March 15, 2009
- Fire Zone 2SB2B, Unit 2 Train A Emergency Core Cooling Pump Rooms on March 15, 2009
- Fire Area TB, Penetrations between Control Building and Turbine Building on March 16, 2009

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of four quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05AQ-05.

b. Findings

No findings of significance were identified.

## 1R07 Heat Sink Performance (71111.07)

### .1 Triennial Inspection

#### a. Inspection Scope

In order to evaluate the operational condition of the ultimate heat sink and compliance with regulatory requirements, the inspectors reviewed design documents (calculations and performance specifications), program documents, test and maintenance procedures, and corrective action documents. The inspectors interviewed chemistry personnel, engineers, and program managers. The inspectors reviewed additional nondestructive examination results for the selected heat exchangers that demonstrated structural integrity.

For heat exchangers directly connected to the safety-related service water system, the inspectors evaluated whether testing, inspection and maintenance, or the biotic fouling monitoring program provided sufficient controls to ensure proper heat transfer.

Specifically, the inspectors reviewed: (1) heat exchanger test methods and test results from performance testing, (2) as necessary, heat exchanger inspection and cleaning methods and results, and (3) chemical treatments for microfouling and controls for macrofouling.

For heat exchangers directly or indirectly connected to the safety-related service water system, the inspectors verified that the licensee: (1) performed condition monitoring and operation consistent with design assumptions in the heat transfer calculations, (2) evaluated the potential for water hammer and established operation to limit flow-induced vibration, as applicable, (3) instituted appropriate chemistry controls for heat exchangers indirectly connected to the safety-related service water system, and (4) flow tested redundant and infrequently used heat exchangers at maximum design flow.

For the ultimate heat sink and its subcomponents, the inspectors verified the licensee established appropriate controls for macrofouling and biotic fouling. Since the licensee had an ultimate heat sink encapsulated by an embankment, a dam, and a weir, the inspectors: (1) verified the licensee checked for settling and sediment buildup every five years, (2) reviewed the latest 10-year third-party evaluation of the ultimate heat sink depth, (3) verified sufficient reservoir capacity existed, (4) reviewed performance of testing components, and (5) reviewed actions taken to maintain buried piping at the facility.

The inspectors selected heat exchangers that ranked high in the plant specific risk assessment and were directly or indirectly connected to the safety-related service water system. The inspectors selected the following specific heat exchangers:

- Component Cooling Water Heat Exchanger 1-02
- Component Cooling Water Heat Exchanger 2-02
- Unit 1 diesel generator jacket water heat exchangers

Inspection Procedure 71111.07 requires that two to three samples of heat exchangers or ultimate heat sinks be reviewed. These activities constitute completion of three heat sink performance samples.

b. Findings

No findings of significance were identified.

**1R11 Licensed Operator Requalification Program (71111.11)**

a. Inspection Scope

On March 16, 2009, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to implement appropriate emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

The inspectors evaluated the following risk significant systems, components, and degraded performance issues:

- Borated water leaking through the Unit 1 containment sandbox area concrete during refueling activities
- 6.9 kV breakers

The inspectors reviewed events where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)

- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)

The inspectors verified appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified that maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12.05.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Tornado Watch for Somervell County on November 10, 2008
- Unit 1 solid state protection system card failure on February 23, 2009
- Unit 2 high pressure safety injection Pump 2-02 maintenance on March 9, 2009
- Removal of high energy line break barrier door S1-40C for maintenance on March 9, 2009

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the

risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of four maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

Introduction. The inspectors identified a finding for the failure to follow housekeeping procedural guidance in Procedure STA-607, "Housekeeping Control," Revision 19. Specifically, the licensee failed to remove scrap sheet steel from the Unit 1 diesel generator building roof following maintenance. As a result, the material could have affected the offsite power supply to safety-related electrical busses if high winds carried it on to nearby transmission lines.

Description. On December 8, 2008, while touring the rooftops of safety-related buildings, the inspectors observed multiple pieces of thin scrap sheet metal, approximately five feet long and one foot wide, lying under and next to the Unit 1, Train B diesel generator muffler. The inspectors determined that the material was light enough to be blown off of the building in high winds, and if it was blown off, that it was large enough to adversely affect the nearby transmission lines that are the preferred offsite power supply to the Unit 2 safety-related electrical busses and the alternate offsite power supply to the Unit 1 safety-related busses. Upon notification by the inspectors, the licensee promptly removed the scrap material and documented the condition in Smart Form SMF-2008-004000-00.

During the followup to this issue, the inspector discovered that the thin scrap sheet metal had been removed from the interior of the muffler and left on the rooftop during the Unit 1 refueling outage. The work was completed on October 10, 2008. Procedure STA-607, "Housekeeping Control," Revision 19, Step 6.3.7 requires, in part, that that scrap material shall be removed as necessary to avoid accumulations which would degrade the housekeeping zone. The licensee designates the safety-related building rooftops as non-quality related areas, so the procedure is a guideline for those areas.

On November 10, 2008, during the time the thin scrap sheet metal remained on the roof, a tornado watch was declared for Somervell County. The licensee entered Procedure ABN-907, "Acts of Nature", Revision 11, Section 5. The procedure directs, under Shift Manager discretion for personnel safety, a site walkdown to identify and remove potential debris that could become airborne during severe weather. The inspectors could not determine whether a site walkdown had been performed. However, discussions with licensee personnel revealed that the building roofs would not normally be part of this walkdown. Other than a bi-annual buildings and structure inspection, the licensee does not perform any other formal walkdowns on the rooftop.

The licensee investigated the cause of the finding and determined that the work group that performed the work on the muffler expected a different onsite group to remove the thin scrap sheet metal from the rooftop. However, the communication was ineffective so that the scrap metal was not removed. This was a significant contributor to the finding.

Analysis. The inspectors screened the issue to determine if a performance deficiency existed. NRC Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," states, in part, that a performance deficiency can exist if: (1) a licensee fails to meet a self-imposed standard and (2) the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. Procedure STA-607, "Housekeeping Control," Step 2.0 requires, in part, that the housekeeping procedure should be used as a guideline for non-quality related areas and Step 6.3.7 requires, in part, that that scrap material shall be removed as necessary to avoid accumulations which would degrade the housekeeping zone. The licensee indicated that it was management's expectation that Procedure STA-607 be followed and that the scrap material should have been promptly removed from the roof upon completion of the maintenance activity. When the inspectors informed the licensee about the debris on the roof, licensee personnel complied with management's expectation and standard for housekeeping and, without delay, removed the material. The inspectors determined that the cause of the issue was reasonably within the licensee's ability to foresee and correct and should have been prevented. Therefore, the inspectors concluded that the failure to remove scrap material from the diesel generator building roof following maintenance activities which could adversely affect offsite power during high winds was a performance deficiency.

The inspectors evaluated the safety significance of the finding. The finding was more than minor because it was associated with the initiating events cornerstone attribute of protection against external factors and affected the cornerstone objective, in that, it increased the likelihood of an event that would upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1- Initial Characterization and Screening of Findings," the finding screened as very low safety significance because the condition did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. The cause of this finding was related to the Human Performance crosscutting component of work control, in that, the licensee failed to appropriately coordinate work activities [H3.b].

Enforcement. The inspectors evaluated the finding for enforcement. The inspectors determined that enforcement action does not apply because the diesel generator building rooftops areas are non-quality related and the scrap metal would affect nonsafety-related offsite power supply to the safety-related busses. The licensee documented the finding in the corrective action program as Smart Form SMF-2008-004000-00. The issue is being characterized as a finding: FIN 05000445/2009002-01, "Failure to Remove Debris from Rooftop Causes Potential Missile Hazard."

## **1R15 Operability Evaluations (71111.15)**

### **a. Inspection Scope**

The inspectors reviewed the following issues:

- SMF-2006-003464-01, boric acid accumulation on inside of Unit 2 containment spray sump piping
- SMF-2008-003844-00, nitrogen supply to main steam isolation Valve 1-01 leakage

- SMF-2009-000005-00, component cooling water leak at a socket weld on uninterruptible power supply air conditioning Unit X-01
- SMF-2008-004024-00, emergency diesel generator intermittent load oscillations
- SMF-2009-000095-00, inadequate racking tool used on 480 volt breakers
- SMF-2009-000465-00, power range positive rate trip function

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the Technical Specifications and Final Safety Analysis Report to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of six operability evaluation inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for failure to follow procedures that require initiating a Smart Form for damage to safety-related equipment. The licensee discovered a bent shutter pin in the internal racking mechanism of a circuit breaker during maintenance. However, because the condition was not entered into the Smart Form database, the licensee failed to correct the cause of the condition and formally evaluate the impact of the condition on all of the associated 480 volt breakers.

Description. The inspectors reviewed the licensee response to NRC identified noncited violation NCV 05000445/2008005-05, "Failure to Initiate Corrective Actions for the Malfunction of a Reactor Trip Bypass Breaker." While reviewing Work Order 405502, the inspectors discovered that the licensee documented the as-found condition of the reactor trip bypass breaker as "levering mechanism has bent pin" and that the problem section noted "need to build a better racking tool." On October 6, 2008, the licensee closed the work order.

The inspectors interviewed the licensee personnel who performed the work order and learned that the damage to the breaker was caused by an inadequate racking tool. Licensee personnel also stated that the inadequate racking tools had been replaced with proper tools in the field. The inspectors noted that licensee personnel had not written a Smart Form for the damage to the safety-related breaker. On January 12, 2009, the inspectors interviewed the plant equipment operators who use the tools to rack the

breakers. The operators stated that they had not been notified of the change in tools. They also stated that a Unit 2 reactor trip bypass breaker had been racked in that morning with a remaining inadequate racking tool. The inspectors notified the licensee about the issue. The licensee initiated Smart Form SMF-2009-000095-00 to document the issue.

The inspectors reviewed operating experience on the issue. The inspectors noted that there was numerous industry operating experience reports of other types of safety-related breakers failing due to mechanical binding of bent or misaligned components. In addition, operating experience exists on a similar breaker that failed due to an incorrect racking tool causing the levering pin to dislodge and short electrical contacts. The licensee determined that the bent pin did not affect the operability of the breaker through visual observation, conversations with the vendor, and because the breaker had passed surveillances with the bent pin. The licensee applied this evaluation to the other similar breakers in the plant that might have bent pins.

Analysis. The licensee's failure to initiate a Smart Form for damage to a safety-related breaker resulted in the failure to formally evaluate the condition, as well as the failure to correct the racking tool, which was a performance deficiency. The finding was more than minor because if the licensee continues to fail to document damage to safety-related equipment in the Smart Form database, there is potential that this could lead to a more significant safety concern, in that, the damage will not be evaluated and corrected. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1- Initial Characterization and Screening of Findings," the finding screened as very low safety significance because the condition did not result in the inoperability of safety-related breakers when they were required to be operable. The cause of this finding was related to the Problem Identification and Resolution crosscutting component of the corrective action program, in that, the licensee failed to enter the issue into the Smart Form database [P1.a].

Enforcement. The inspectors determined that 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions. Procedure STA-421, "Initiation of Smart Forms," Revision 14, Attachment 8.A required, in part, that equipment malfunctions, damage, or degradation, other than anticipated wear be documented on a Smart Form. Contrary to the above, the licensee failed to document damage to safety-related breakers on a Smart Form. Since the violation was of very low safety significance and was documented in the licensee's corrective action program as Smart Form SMF-2009-000095-00, it is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000445/2009002-02; 05000446/2009002-02, "Failure to Initiate a Smart Form for Damage to Safety-Related Breakers."

## **1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (71111.17)**

### **a. Inspection Scope**

The inspectors reviewed the effectiveness of the licensee's implementation of evaluations performed in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments," and changes, tests, experiments, or methodology changes that the licensee determined did not require 10 CFR 50.59 evaluations. The inspection

procedure requires the review of 6 to 12 licensee evaluations required by 10 CFR 50.59, 12 to 25 changes, tests, or experiments that were screened out by the licensee and 5 to 15 permanent plant modifications.

The inspectors reviewed 6 evaluations required by 10 CFR 50.59; 24 changes, tests, and experiments that were screened out by licensee personnel; and 13 permanent plant modifications. Document numbers of the evaluations, changes, and modifications reviewed are listed in the attachment.

The inspectors verified that when changes, tests, or experiments were made, that evaluations were performed in accordance with 10 CFR 50.59 and that licensee personnel had appropriately concluded that the change, test or experiment can be accomplished without obtaining a license amendment. The inspectors also verified that safety issues related to the changes, tests, or experiments were resolved. The inspectors reviewed changes, tests, and experiments that licensee personnel determined did not require evaluations and verified that the licensee personnel's conclusions were correct and consistent with 10 CFR 50.59. The inspectors also verified that procedures, design, and licensing basis documentation used to support the changes were accurate after the changes had been made.

In the inspection of modifications the inspectors verified that supporting design and license basis documentation had been updated accordingly and was still consistent with the new design. The inspectors verified that procedures, training plans and other design basis features had been adequately accounted for and updated. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six evaluations; 24 changes, tests, or experiments; and 13 permanent plant modification samples as defined in Inspection Procedure 71111.17-04.

b. Findings

No findings of significance were identified.

**1R19 Postmaintenance Testing (71111.19)**

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Packing adjustment of 1-8801B, Centrifugal Charging Pump 1-01/1-02 Safety Injection Isolation Valve, on September 16, 2008
- Stroke time testing following air regulator replacement on Valve 1MS-0143, Unit 1, turbine driven auxiliary feedwater pump steam supply valve, observed on January 27, 2009
- Unit 2 rod control circuit card replacement on February 20, 2009
- Unit 1 solid state protection system card replacement on February 23, 2009

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated the activities to ensure the testing was adequate for the maintenance performed, the acceptance criteria were clear, and the test ensured equipment operational readiness.

The inspectors evaluated the activities against Technical Specifications, the Final Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them into the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of four postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

**1R22 Surveillance Testing (71111.22)**

a. Inspection Scope

The inspectors reviewed the Final Safety Analysis Report, procedure requirements, and Technical Specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the following surveillance testing:

- Unit 2 diesel generator Train B in accordance with Procedure OPT-214B, "Diesel Generator Operability Test," Revision 13, on January 21, 2009
- Unit 1 neutron flux power range channel calibration in accordance with Procedure INC-7373A, "Channel Calibration Neutron Flux Monitor N-0050B," Revision 6, on January 29, 2009
- Unit 2 relay testing in accordance with Procedure OPT-467B, "Train A Safeguards Slave Relay K609 Actuation Test," Revision 3, on March 4, 2009
- Unit 1 service water Train B in accordance with Procedure OPT-207A, "Service Water System," Revision 14, on March 13, 2009

Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of four surveillance testing inspection samples (one in-service test sample and three routine surveillance testing samples) as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

**1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)**

a. Inspection Scope

The inspectors performed an in-office review of Revision 36 to the Comanche Peak Steam Electric Station Emergency Plan, submitted January 27, 2009. This revision incorporated a change to the northern boundary of the emergency response zones in the Granbury area to more clearly define the physical location of the northern-most boundary of the 10 mile emergency planning zone. The NRC staff completed a technical and regulatory review of these changes and concluded that it did not decrease the effectiveness of the plan documented in a letter dated January 9, 2008 (ML073460591).

The revision was compared to the criteria of NUREG 0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). The review of the plan revision was not documented in a Safety Evaluation Report and did not constitute an approval of the licensee's changes; therefore, these revisions are subject to future inspection.

These activities constitute the completion of one emergency action level and emergency plan changes sample as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings of significance were identified.

## **1EP6 Drill Evaluation (71114.06)**

### a. Inspection Scope

On February 10, 2009, the inspectors evaluated the conduct of a licensee emergency drill to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also compared any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

These activities constituted completion one emergency preparedness drill sample as defined in Inspection Procedure 71114.06-05.

### b. Findings

No findings of significance were identified.

## **4OA1 Performance Indicator Verification (71151)**

### .1 Data Submission Issue

#### a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the fourth quarter 2008 performance indicators for any obvious inconsistencies prior to its public release in accordance with NRC Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

#### b. Findings

No findings of significance were identified.

### .2 Unplanned Scrams per 7000 Critical Hours

#### a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams per 7000 critical hours performance indicator for Units 1 and 2 for the period from January through December 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, event reports and NRC integrated inspection reports to validate the accuracy of the submittals. The inspectors also reviewed the corrective action database to determine if any problems

had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two unplanned scrams per 7000 critical hours samples as defined in Inspection Procedure 71151.05.

b. Findings

No findings of significance were identified.

.3 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams with complications performance indicator for Units 1 and 2 for the period from January through December 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, event reports and NRC integrated inspection reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's corrective action database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two unplanned scrams with complications samples as defined in Inspection Procedure 71151.05.

b. Findings

No findings of significance were identified.

.4 Unplanned Power Changes per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned power changes per 7000 critical hours performance indicator for Units 1 and 2 for the period from January through December 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, maintenance rule records, event reports and NRC integrated inspection reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's corrective action database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two unplanned power changes per 7000 critical hours samples as defined in Inspection Procedure 71151.05.

b. Findings

No findings of significance were identified.

**40A2 Identification and Resolution of Problems (71152)**

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

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

## 40A3 Event Follow-up (71153)

### .1 (Closed) Licensee Event Report 05000445/2007001: Emergency Diesel Generator Inoperable for Longer Than Allowed by Technical Specifications Due to Paint on Metering Rod

On November 21, 2007, the Unit 1, Train B diesel generator failed to start during a monthly surveillance test. The licensee determined that paint residue from a small drop of paint on one of the fuel pump control racks was the cause of the failure. The licensee removed the residue and the diesel was successfully started and returned to service. The licensee documented the diesel failure in Smart Form SMF 2007-003253-01. A self-revealing white violation, 05000445/2007008-01, was opened in NRC Special Inspection Report 2007008. On August 12, 2008, the violation was documented as closed in NRC Supplemental Inspection Report 2008009. No new findings were identified in the review of the licensee event report. This licensee event report is closed.

### .2 Unplanned Unit 1 Turbine Load Reduction

#### a. Inspection Scope

The inspectors reviewed the events surrounding the unplanned Unit 1 turbine load reduction on January 6, 2009. The inspectors discussed the event with control room personnel and operation's management. The inspectors observed operators perform turbine load changes to further understand the cause of the event.

#### b. Findings

Introduction. A Green self-revealing noncited violation of Technical Specification 5.4.1a was identified for the failure of operators to follow procedural requirements when reducing turbine load. As a result, operators transposed two digits and inadvertently reduced turbine load from 1273.7 megawatts to 1237.5 megawatts instead of 1273.5 megawatts.

Description. On January 6, 2009, the operators used Procedure IPO-003A, "Power Operations," and attempted to lower turbine loading from 1273.7 megawatts to 1273.5 megawatts. The operators transposed two numbers in the turbine load set, 1237.5 megawatts instead of 1273.5 megawatts, and caused a 36 megawatt plant transient. In response to the transient, the control rods automatically inserted approximately 17 steps to maintain programmed reactor coolant system temperature. Operators ultimately stabilized the unit and returned it to the desired megawatt output.

Analysis. The failure to follow procedural requirements when controlling turbine load is a performance deficiency. The finding was more than minor because it was associated with the human performance attribute of the initiating events cornerstone, and directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because it did not contribute to the likelihood of mitigating equipment being unavailable.

The inspectors reviewed Procedure IPO-003A and observed subsequent operator turbine load changes to determine the cause of the event. The inspectors determined that a reactor operator failed to perform adequate self-checking techniques when

entering the desired turbine load in the digital control system for the power adjustment. In addition, another reactor operator failed to perform adequate peer-checking techniques and therefore did not identify the incorrect load setting. A senior reactor operator supervising the unit also failed to recognize the incorrect desired load value. The inspectors concluded that the cause of the finding was related to the Human Performance crosscutting component of work practices for the failure to use self and peer checking techniques [H4.a].

Enforcement. Technical Specification 5.4.1.a requires, in part, that the licensee implement the procedures recommended by Regulatory Guide 1.33, Appendix A, Revision 2. Regulatory Guide 1.33, Appendix A, Section 2.g recommends procedures for power operation. Procedure IPO-003A, "Power Operations," Revision 26, Step 5.5.D provides instructions on load adjustments to maintain 100 percent power. Contrary to the above, on January 6, 2009, operators failed to follow procedure when adjusting power to maintain 100 percent power. As a result, operators inadvertently reduced turbine load from 1273.7 megawatts to 1237.5 megawatts instead of 1273.5 megawatts. Since the violation was of very low safety significance and was documented in the licensee's corrective action program as Smart Form SMF-2009-000028, it is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000445/2009002-03, "Failure to Follow Procedure Causes Unplanned Load Change."

#### **40A5 Other Activities**

##### **.1 Quarterly Resident Inspector Observations of Security Personnel and Activities**

###### **a. Inspection Scope**

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with the licensee's security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

###### **b. Findings**

No findings of significance were identified.

##### **.2 (Closed) Unresolved Item 05000445; 05000446/2007003-01: Residual heat removal heat exchangers meet design safety function**

From review of specified design information in Calculation RXE-LA-CPX/0-020, "Residual Heat Removal Cooldown Calculations," Revision 9, and Calculation ME-CA-0229-2188, "Component Cooling Water Heat Exchanger Fouling Factor Analysis," Revision 6, the inspectors had the following concerns:

- The inspectors were unable to determine whether positive margin for the heat transfer rate existed.

- Instrument uncertainties were not explicitly considered for Calculation ME-CA-0229-2188 in determining the worst case acceptable fouling factor for the component cooling water heat exchangers.
- The inspectors could not determine whether the computer code “Cooldown” had been verified and validated.

During this inspection, the inspectors reviewed Smart Form 2007-001669, which documented the above concerns, and associated documents referenced in the corrective action document. From review of this documentation, the inspectors determined that:

- The licensee had demonstrated that there was an adequate positive margin in both the residual heat removal and component cooling water heat exchangers. Specifically, the licensee removed an inappropriate assumption in the design basis calculation. These calculations assumed that reactor coolant pumps would be running during a design basis loss of coolant accident when this would not be the case. When the heat input from those pumps was removed, a significant amount of heat exchanger margin was shown to be available.
- The licensee had calculated the instrument uncertainties of the coordinated pair temperature elements to be  $\pm 0.20^{\circ}\text{F}$  for each of the measured temperatures and  $\pm 4$  percent for the service water outlet flow, which improved the accuracy of the calculation.
- The licensee had verified and validated their “Cooldown” code.

Since the licensee was able to demonstrate that sufficient margin existed, the calculation accounted for instrument uncertainties, and the licensee had validated the “Cooldown” code, the inspectors consider this unresolved item closed and no performance deficiency had occurred.

#### **40A6 Meetings**

##### Exit Meeting Summary

On January 15, 2009, the inspectors presented the heat sink performance inspection results to Mr. F. Madden, Director, Nuclear Oversight and Regulatory Affairs, and other members of the licensee staff. The licensee acknowledged the information presented. No proprietary information was identified.

On February 9, 2009, the inspectors presented the evaluation of changes, test, or experiments and permanent plant modifications inspection results to Mr. D. Kross, Plant Manager, and other members of the licensee staff. The inspectors stated that they had reviewed proprietary information during the inspection, and verified that all material had been returned to the licensee or destroyed. The licensee acknowledged the inspection results as presented.

On February 25, 2009, the inspectors conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee’s emergency plan to Mr. D. Fuller, Manager, Emergency Preparedness and other members of your staff, who acknowledged the information presented.

On March 26, 2009, the inspectors presented the resident inspection results to Mr. M. Lucas, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors acknowledged review of proprietary material during the inspection. No proprietary information has been included in the report.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

R. Flores, Senior Vice President and Chief Nuclear Officer  
M. Lucas, Site Vice President  
D. Fuller, Manager, Emergency Preparedness  
D. Goodwin, Director, Operations  
B. Hamilton, Director, Engineering Support  
T. Hope, Manager, Nuclear Licensing  
D. Kross, Plant Manager  
F. Madden, Director, Oversight and Regulatory Affairs  
B. Mays, Director, Site Engineering  
E. Meaders, Manager, Work Control/Outage  
M. Pearson, Director, Performance Improvement  
S. Smith, Director, Maintenance  
K. Tate, Manager, Security  
D. Walling, Manager, Training  
D. Wilder, Manager, Plant Support

#### **NRC Personnel**

J. Kramer, Senior Resident Inspector  
B. Tindell, Resident Inspector

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened**

None.

#### **Opened and Closed**

05000445/2009002-01	FIN	Failure to Remove Debris from Rooftop Causes Potential Missile Hazard (Section 1R13)
05000445/2009002-02 05000446/2009002-02	NCV	Failure to Initiate a Smart Form for Damage to Safety-Related Breakers (Section 1R15)
05000445/2009002-03	NCV	Failure to Follow Procedure Causes Unplanned Load Change (Section 4OA3.2)

Closed

05000445/2008007-01	LER	Emergency Diesel Generator Inoperable for Longer Than Allowed by Technical Specifications Due to Paint on Metering Rod (Section 4OA3.1)
05000445/2007003-01 05000446/2007003-01	URI	Residual heat removal heat exchangers meet design safety function (Section 4OA5.2)

Discussed

None.

**LIST OF DOCUMENTS REVIEWED**

**Section 1RO4: Equipment Alignment**

Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M2-0206	Flow Diagram Auxiliary Feedwater System	CP-14
M2-0206 Sheet 1	Flow Diagram Auxiliary Feedwater System Pump Trains	CP-10
M2-0206 Sheet 2	Flow Diagram Auxiliary Feedwater System Yard Layout	CP-9
M2-0221 Sheet 1	Flow Diagram Chemical Feed System Steam Generator Recirculation Subsystems	CP-12
MSM-G0-0220	General Plant Painting	Rev. 2 PCN-8

Work Orders

3515669

**Section 1RO5: Fire Protection**

Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FPI-502	Fire Preplan Instruction Manual - Electrical & Control Building Unit 1 & 2 Battery Rooms, 792'-0" Elevation	1
ABN-806A	Response to Fire in the Electrical and Control Building	5
FPI-510	Fire Preplan Instruction Manual - Electrical & Control	3



Calculations

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Analysis	
ME-CA-0304-3331	Control Room Heating Ventilation and Air Conditioning Technical Specification Surveillance of Air Conditioning Units	Revision 1
MEB-391	Minimum Allowable Service Water Flow to Diesel Generators	Revision 4

Design Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
DBD ME 011	Diesel Generator Sets	Revision 30
DBD ME 229	Component Cooling Water System	Revision 35
DBD ME 233	Station Service Water System	Revision 18

Drawings

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
2323 S 0108	Site Preparation Plan, Sheet 1	Revision 0
FE 14342	Sediment Point Data	
2323 FN SSI 8	Erosion Slab Geometry and Reinforcement	Revision 2
2323 FN SSI 9	Access Road Plan and Profile, Sheet 9	Revision 2

Lesson Plans

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP51.SYS.CC1	Component Cooling Water System	Change 1
OP51.SYS.SW1	Service Water System	Change 2

Surveillances Performed

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
5-06-504345-AA	Control Room Air Conditioning Unit X-01	04/24/06
5-06-504345-AA	Control Room Air Conditioning Unit X-01	08/23/07

Procedures

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ABN 501	Station Service Water System Malfunction	8
CHM 140	Water Treatment	2
CHM 150	Closed Cooling Water Systems	1
COP 501	Station Service Water	7
COP 502A	Component Cooling Water	4
COP-609A	Diesel Generator	7
IST-101	Risk-Informed Inservice Testing	3
MSM P0 3357	Emergency Diesel Engine Jacket Water Cooler Cleaning	1
OPT 116	Control Room AC System	3
PPT SX 7517	Safe Shutdown Impoundment Inspection	2
STA 734	Service Water System Fouling Monitoring Program	3

Miscellaneous Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
CPSES Response to Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	January 26, 1990
CPSES Response to Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	May 21, 1990
CPSES Response to Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	September 21, 1990
CPSES Response to Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	January 7, 1991
CPSES Response to Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	June 19, 1992
Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	July 18, 1989

Miscellaneous Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
Generic Letter 89-13, Supplement 1	Service Water System Problems Affecting Safety-Related Equipment	April 4, 1990
NRC Information Notice 2006-17	Recent Operating Experience of Service Water Systems Due to External Conditions	July 31, 2006
NRC Information Notice 2007-06	Potential Common Cause Vulnerabilities in Essential Service Water Systems	February 9, 2007
NRC Information Notice 2007-28	Potential Common Cause Vulnerabilities in Essential Service Water Systems Due to Inadequate Chemistry Controls	September 19, 2007
Report ERDC/CERL TR- 07-41	Low Maintenance Water Treatment for Heating and Cooling Systems	September 2007

Miscellaneous

Closed Cooling Water Plant Specific Guidelines, Revision 0

Commitment Management Change Evaluation 96-08 for Commitment Number 24796

Commitment Management Change Evaluation 97-07 for Commitment Number 24792

Commitment Management Change Evaluation 04-02 for Commitment Number 24791

Commitment Management Change Evaluation 04-04 for Commitment Number 24796

Component Cooling Water Heat Exchanger 1-01, 1-02, 2-01 and 2-02 fouling and fouling  
margin performance graphs for the past 3 years

Component Cooling Water Surge Tank Level Trends for Units 1 and 2 for the past year

Eddy Current Test Results for selected heat exchangers

Harris Mud Crabs at Comanche Peak Nuclear Power Plant – Mid-project Status Report,  
June 10, 2008

Heat Exchanger Specifications for Component Cooling Water, Containment Spray and Service  
Water

Inservice test data for standby service water and component cooling water pumps and valves

Miscellaneous

Service Water Visual Inspection Form, dated January 31, 2007

System Health Reports for Buildings and Structures, Component Cooling Water System, Electrical Miscellaneous and Service Water System

The Metro Handbook of Water Treatment for HVAC Systems

Smart Forms

SMF-2003-003766-00    SMF-2005-000937-00    SMF-2006-004128-00    SMF-2006-003742  
SMF-2007-001273-00    SMF-2007-001669-00    SMF-2007-003448-00    SMF-2008-001303

WORK ORDERS

403710            408823

**Section 1R11: Licensed Operator Requalification Program**

Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EOP-3.0A	Steam Generator Tube Rupture	8
SGTR/LOAAC	CPNPP Simulator Exercise Guide D0074	5

Smart Forms

SMF-2006-002752-00

**Section 1R12: Maintenance Effectiveness**

Smart Forms

SMF-2008-003483-00    SMF-2008-003194-00

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedures

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
NQA 3.09-9.04	Quality Control Routine Inspection and Plant Housekeeping Program	7
STA-607	Housekeeping Control	19
ABN-907	Acts of Nature	11

Work Orders  
3543300 413483

Smart Forms  
SMF-2009-000402-00 SMF-2009-000404-00 SMF-2009-000408-00 SMF-2009-000415-00  
BIF-2008-000055-11-00

**Section 1R15: Operability Evaluations**

Work Orders  
3483141 405368 405502

Smart Forms  
SMF-2008-003735-00 SMF-2008-003844-00 SMF-2008-004024-00 SMF-2008-004165-00  
SMF-2009-000095-00

**Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications**

Procedures

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ALM-0062A	Alarm Procedure 1-ALB-6B	6
ALM-0701	Alarm Procedure Spent Fuel Pool Panel	5
ECE-5.01-3	Design Change Notices and Related Process Documentation	11
ECE-5.01-8	Electronic Design Change Process	13
EPT-413A-R0-1	50 MW Load Reduction Test and Steam Generator Water Level Control System Loop Tuning	0
MDA-304	Control of Heavy Loads and Critical Lifts	6
MDA-308	Requirements for Load Handling Personnel	8
MDA-316	Control of Load Handling	0
MSG-2013	Polar Crane/Telescoping Jib Crane Operating Instructions and Restrictions	4
RFO-102	Refueling Operation	12
SOP-506	Spent Fuel Pool Cooling and Cleanup System	17
STA-707	10CFR50.59 Reviews	17

Procedures

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
STA-716	Modification Process	17
STA-734	Service Water System Fouling Monitoring Program	3

Calculations

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
1-SC-34-03	Turbine Impulse Chamber Pressure 1-P-0505	7
1-SC-34-08	Turbine Impulse Chamber Pressure 1-P-0506	7
CS(B)-143	Fuel Building – Spent Fuel	3
EM(B)-054	Spent Fuel Pool Liner Analysis	3
ME(B)-240	Condensate Storage Tank Technical Specifications Limits	3
ME-CA-0000-5295	Comanche Peak Unit 1 Minimum CST Volume for RSG/Uprate	1
ME-CA-0000-5405	Impact of Stretch Power Uprate on Spent Fuel Pool Rerack Gamma Heating	0
ME-CA-0000-5412	Mechanical Equipment Qualification Doses Updated for Stretch Power Uprate	0
ME-CA-0000-5417	Impact of SPU on Spent Fuel Pool Concrete Temperature Transient Analysis	0
ME-CA-0233-5017	SSI Heat Load Summary	2

Drawings

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
14759-3	48 inch - Class150 150WOG Single Flg. and Weld End Valve Assembly and Matrix number 451G2 SR80	1
BRHL-FW-1-SB-035	Feedwater	CP-2
BRP-FW-1-SB-035	Feedwater	CP-3
FW-1-098-005-S26R	Vendor Certified Drawing	4
M2-0202	Flow Diagram Main Steam Reheat and Steam Dump	15
M1-0206	Flow Diagram Auxiliary Feedwater System Yard Layout	19
M2-0206	Flow Diagram Auxiliary Feedwater System Yard Layout	9
M2-0237	Flow Diagram Vents and Drains System Turbine Building	8
M2-2202	Instrumentation & Control Diagram Main Steam Reheat and Steam Dump System Channel 2417, 2424/2431	3
SK-0001-04-000089-02-00	Ventilation Containment Plan at EL 905'- 9"	0
SK-0003-04-000089-02-00	Flow Diagram Reactor Coolant System	0
SK-0003-06-003423-01-01	Diesel Generator Fuel Oil Transfer Pump Tag CP1-DOAPFT-02	1
SK-0004-06-003423-01-01	Diesel Generator Fuel Oil Transfer Pump Tag CP1-DOAPFT-02	1
TBX-2-2102	Unit 1 Feedwater Inservice Inspection Location Isometric	2
TBX-2-2202	Unit 2 Feedwater Inservice Inspection Location Isometric	2

Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
DBD-CS-070B	Reactor Coolant Loop Piping Support Design	3
DBD-ME-026	Station Blackout	9
DBD-ME-028	Classification of Structures, Systems, and Components	15
DBD-ME-080	Fuel Storage and Handling	28
DBD-ME-250	Reactor Coolant System	39
DBD-ME-301	Containment Air Cleanup Systems	15

10 CFR 50.59 Screens

59SC-2004-000089-05-01	59SC-2006-001933-03-00	59SC-2007-001267-01-00
59SC-2004-003718-01-00	59SC-2006-002339-01-03	59SC-2007-001284-01-00
59SC-2005-000224-02-02	59SC-2006-002719-01-00	59SC-2007-001435-01-01
59SC-2005-000658-04-00	59SC-2006-003423-02-00	59SC-2007-001925-02-00
59SC-2005-000659-03-01	59SC-2006-003609-02-01	59SC-2008-001146-01-00
59SC-2005-003066-02-00	59SC-2006-003919-01-00	59SC-2008-001463-01-00
59SC-2005-004851-01-00	59SC-2006-003423-02-00	59SC-2008-002642-01-00
59SC-2006-000629-01-00	59SC-2007-001264-01-00	59SC-2008-003268-01-00

10 CFR 50.59 Evaluations

59EV-2006-000629-01-00	59EV-2006-003080-02-00	59EV-2007-001435-01-00
59EV-2006-003080-01-00	59EV-2007-000878-01-00	59EV-2008-000114-01-00

Permanent Modifications

FDA-2000-002383-03-00	FDA-2006-003080-22-00	FDA-2007-000999-01-00
FDA-2003-001212-01-00	FDA-2006-003080-24-00	FDA-2007-001284-01-00
FDA-2004-002698-01-00	FDA-2006-003080-38-00	FDA-2008-000750-01-00
FDA-2005-003364-26-00	FDA-2007-000306-01-00	FDA-2008-001146-01-00
FDA-2006-003080-01-00		

Smart Forms

SMF-2006-003609-00	SMF-2009-000199-00	SMF-2009-000297-00
SMF-2007-000466-00	SMF-2009-000201-00	SMF-2009-000313-00
SMF-2007-001786-00	SMF-2009-000204-00	SMF-2009-000351-00
SMF-2009-000170-00	SMF-2009-000208-00	SMF-2009-000437-00
SMF-2009-000197-00		

Work Orders

3446720	3462747	3534044	3601809	366523
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Miscellaneous

PAR Nuclear Justification for FTS HPU Solenoid Valve Replacement at Comanche Peak, January 17, 2007.

2323-MS-611A, Electronic Pressure and Differential Pressure Transmitters, Revision 18.

WCAP16871-P, Comanche Peak Nuclear Power Plant Stretch Power Uprate Engineering Report, Revision 0

**Section 1R19: Postmaintenance Testing**

Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
IST-301	Inservice Testing of Motor Operated Valves	4
MSM-G0-8202	Graphite Valve Packing and Live Loading	3
TE-95-00-0882-00-00	Generic Letter 89-10 Post Work Test Evaluation for Motor Operated Valves	0
OPT-603A	TDAFW Accumulator Check Valve Leak Test	5
OPT-206A	AFW System	28

Work Orders

3527609 404602 405733

Smart Forms

SMF-2008-003558-00

**Section 1R22: Surveillance Testing**

Work Orders

3657079

**Section 4OA2: Identification and Resolution of Problems**

Miscellaneous

Steam Generator Condition Monitoring and Operational Assessment for Comanche Peak Unit 2 April 2008 Outage (2RF10)

SMF-2008-001029-00 SMF-2008-001288-00 SMF-2008-001393-00

**Section 4OA5: Other Activities (Section .2)**

Miscellaneous Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
16345-MEB-609	Performance Prediction and Fouling Factor Determination of Component Cooling Water Cooler	1
IC(S)-011	Station Service Water Component Cooling Water Heat Exchanger Outlet Flow Loop Accuracy Calculation (F-4265 & F-4266)	4
IC-CA-1101-5101	Units 1 & 2 Component Cooling Water Heat Exchanger Temperature Loop Accuracy (T-4529, 4531, 4533, 4535, 4261, 4262, 4263, and 4264)	2
RXE-LA-CPX/0-017	COOLDOWN: A Computer Code to Calculate Component Cooling Water Heat Exchanger and Reactor Coolant System Temperature During Cooldown	2
RXE-LA-CPX/0-018	Ultimate Heat Sink and Maximum Sump Temperature	7
RXE-LA-CPX/0-020	Residual Heat Removal Cooldown Calculations	10
STA-734	Service Water System Fouling Monitoring Program  Supplemental Safety Evaluation Report 17 documenting closure of Open Item F-33	0