UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

January 25, 2005

Mr. M. R. Blevins, Senior Vice President
and Chief Nuclear Officer
TXU Energy
ATTN: Regulatory Affairs
Comanche Peak Steam Electric Station
P.O. Box 1002
Glen Rose, Texas 76043

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION - NRC INTEGRATED INSPECTION REPORT 05000445/2004005 AND 05000446/2004005

Dear Mr. Blevins:

On December 31, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Steam Electric Station, Units 1 and 2, facility. The enclosed integrated inspection report documents the inspection findings which were discussed on January 6, 2005, with you and members of your staff.

This inspection examined activities conducted under your licenses as they related to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

There were three self-revealing findings of very low safety significance (Green) identified in the report. These three findings were determined not to involve violations of NRC requirements. If you contest any findings in this report, you should provide a response within 30 days of the date of this inspection report, with the basis of your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Comanche Peak Steam Electric Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) 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).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

William D. Johnson, Chief
Project Branch A
Division of Reactor Projects

Dockets: 50-445
50-446
Licenses: NPF-87
NPF-89

Enclosure:
NRC Inspection Report 05000445/2004005 and 05000446/2004005
w/attachment: Supplemental Information

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AASanchez	AJBarrett	JLTaylor	JXCruz	DBAllen	
E-WDJ	***E-WDJ***	***E-WDJ***	***E-WDJ***	***E-WDJ***	
1/18/05	1/19/05	1/13/05	1/12/05	1/18/05	

C:DRS/EB	C:DRS/OB	C:DRS/PEB	C:DRS/PSB	C:DRP/A	
JAClark	ATGody	LJSmith	MPShannon	WDJohnson	
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1/13/05	1/20/05	1/14/05	1/20/05	1/25/05	

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Dockets:	50-445, 50-446
Licenses:	NPF-87, NPF-89
Report:	05000445/2004005 and 05000446/2004005
Licensee:	TXU Generation Company LP
Facility:	Comanche Peak Steam Electric Station, Units 1 and 2
Location:	FM-56, Glen Rose, Texas
Dates:	September 24 through December 31, 2004
Inspectors:	D. B. Allen, Senior Resident Inspector A. A. Sanchez, Resident Inspector J. X. Cruz, Senior Resident Inspector J. L. Taylor, Resident Inspector A. J. Barrett, Project Engineer R. E. Lantz, Senior Emergency Preparedness Inspector
Approved by:	W. D. Johnson, Chief, Project Branch A Division of Reactor Projects
Attachment:	Supplemental Information

SUMMARY OF FINDINGS

Comanche Peak Steam Electric Station, Units 1 and 2
NRC Inspection Report 05000445/2004005, 05000446/2004005

IR 05000445/2004005, 05000446/2004005; 09/24/2004-12/31/2004; Comanche Peak Steam Electric Station, Units 1 & 2; Personnel Performance During Nonroutine Plant Evolutions and Events, and Event Followup.

This report covered a three-month period of inspection by four resident inspectors and one regional project engineer. Three Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the Significance Determination Process does not apply may be Green or may 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 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing finding was identified for inadequate control of maintenance activities which resulted in the loss of heater drain forward flow to the Unit 2 main feedwater pumps and subsequent reactor downpower to approximately 60 percent power to avoid a plant trip on loss of feedwater flow. Troubleshooting a heater drain pump recirculation valve unexpectedly caused the opposite recirculation valve to open. No violation of NRC requirements occurred because the heater drain system is nonsafety-related.

  The finding is more than minor because it resulted in a plant transient, similar to example 4. b. of Appendix E to Manual Chapter 0612. The finding is associated with the human performance attribute and affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. The finding was processed through the significance determination process and determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. (Section 1R14.1)

- Green. A self-revealing finding was identified for failing to follow the procedure to transfer turbine control from the electro hydraulic control to the manual hydraulic control which resulted in a Unit 2 turbine runback to 65 percent turbine load. No violation of NRC requirements occurred because the turbine control system is nonsafety-related.

  The finding is more than minor because it resulted in a plant transient, similar to example 4. b. of Appendix E to Manual Chapter 0612. The finding is associated with

the human performance attribute and affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. The finding was processed through the significance determination process and determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. (Section 1R14.2)

- Green. A self-revealing finding was identified for improper reassembly of a main generator stroboscope lamp reflector assembly which resulted in a Unit 2 reactor trip. While Comanche Peak Steam Electric Station technicians were leaving the exciter housing after collecting monthly voltage and current data from the rotor shaft, a stroboscope lamp reflector assembly became loose and migrated into the rectifier wheel, causing a phase to phase fault and trip of the main generator, turbine and reactor. No violation of NRC requirements occurred because the main generator is nonsafety-related.

  The performance deficiency was failure to properly reassembly the stroboscope lamp reflector assembly. The finding is more than minor because it resulted in a plant transient, similar to example 4. b. of Appendix E to Manual Chapter 0612. The finding is associated with the human performance attribute and affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. The finding was processed through the significance determination process and determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. Corrective actions included enhanced work instructions for reassembly of stroboscopes. (Section 4OA3.2)

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Comanche Peak Steam Electric Station (CPSES) Unit 1 operated at essentially 100 percent power for the entire inspection period.

CPSES Unit 2 began the period operating at essentially 100 percent power. On October 8 the turbine load was reduced to 700 MW (approximately 60 percent reactor power) in response to a heater drain pump recirculation valve opening during troubleshooting. The unit was returned to 100 percent power on October 9, 2004. On November 3, while the unit was being restored from a failure of a main generator Phase A potential transformer, the turbine control system ramped turbine load to 725 MW (approximately 65 percent reactor power). The unit was returned to 100 percent power on November 4, 2004, and remained at essentially 100 percent power for the rest of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors conducted partial walkdowns of the following two risk-significant systems to verify that they were in their proper standby alignment as defined by system operating procedures and system drawings. During the walkdowns, inspectors examined system components for materiel conditions that could degrade system performance. In addition, the inspectors evaluated the effectiveness of the licensee's problem identification and resolution program in resolving issues which could increase event initiation frequency or impact mitigating system availability.

- Unit 2 turbine driven auxiliary feedwater system in accordance with System Operating Procedure (SOP) SOP-304B, "Auxiliary Feedwater System," Revision 9 and Operation Test Procedure (OPT) OPT-206B, "AFW System," Revision 16, after maintenance on the turbine governor valve and while Emergency Diesel Generator (EDG) 2-02 was operating for a surveillance test on November 4, 2004

- Unit 1 Train B motor driven auxiliary feedwater system in accordance with SOP-304A, "Auxiliary Feedwater System," Revision 15, while the Train A motor driven auxiliary feedwater system was inoperable due to scheduled maintenance and surveillance testing on December 9, 2004

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors assessed the licensee's control of transient combustible materials, the materiel condition and lineup of fire detection and suppression systems, and the materiel condition of manual fire equipment and passive fire barriers during tours of the following seven risk-significant areas. The licensee's fire preplans and Fire Hazards Analysis Report were used to identify important plant equipment, fire loading, detection and suppression equipment locations, and planned actions to respond to a fire in each of the plant areas selected. Compensatory measures for degraded equipment were evaluated for effectiveness.

- Fire Zone 2-SB004 - Unit 2 safeguards building 790 foot elevation Rooms 59, 64, 70, and 71 on November 5, 2004
- Fire Zone EQ149 - Unit 2 uninterruptible power system heating, ventilation and air conditioning Room X-115D on November 10, 2004
- Fire Zone ER150 - Unit 1 uninterruptible power system heating, ventilation and air conditioning Room X-115C on November 10, 2004
- Fire Zone EA043 - Units 1 and 2 steam generator blowdown heat exchanger Room X-113 on November 10, 2004
- Fire Zones 1-SI12A and 1-SI12B - Unit 1 Train B EDG Room 1-085 and Fuel Oil Day Tank Room 1-099A on November 19, 2004
- Fire Zone AA96, 97, 99a-e - Fuel building on November 30, 2004
- Fire Zones 2-SI12A and 2-SI12B - Unit 2 Train B EDG Room 2-085 and Fuel Oil Day Tank Room 2-099A on December 8, 2004

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

Quarterly Licensed Operator Requalification Activities Review

a. Inspection Scope

The inspectors observed a licensed operator training session in the control room simulator on December 1, 2004. The scenario included: a pressurizer pressure channel failure, condenser tube leak which lead to high sodium concentrations in the steam generators, turbine building flooding due to a circulating water expansion joint

leak, a failure of one motor driven auxiliary feedwater pump after the manual trip, and a faulted steam generator outside containment followed by a faulted steam generator inside containment. Simulator observations included formality and clarity of communications, group dynamics, the conduct of operations, procedure usage, command and control, and activities associated with the emergency plan.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors independently verified that CPSES personnel properly implemented 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for two equipment performance problems:

- The Unit 1 Steam Generator 1-03 Tubesheet Drain Valve 1MS-664 seat leakage into containment. This issue was entered into the corrective action program as SmartForm (SMF) SMF-2004-2680-00.

- The Unit 1 EDG 1-02 failure to respond properly to load demands and replacement of the defective load sensor which lead to the diesel being inoperable on November 24, 2004. These two issues were placed into the corrective action program as SMF-2004-3300-00 and SMF-2004-3836-00.

The inspectors reviewed whether the structures, systems, or components (SSCs) that experienced problems were properly characterized in the scope of the Maintenance Rule Program and whether the SSC failure or performance problem was properly characterized. The inspectors assessed the appropriateness of the performance criteria established for the SSCs where applicable. The inspectors also independently verified that the corrective actions and responses were appropriate and adequate.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors reviewed five selected activities regarding risk evaluations and overall plant configuration control. The inspectors discussed emergent work issues with work control personnel and reviewed the potential risk impact of these activities to verify that the work was adequately planned, controlled, and executed. The activities reviewed were associated with:

- Implementation of compensating actions for failure of the Unit 1 main generator Phase A potential transformer which supplied input to the digital electrical hydraulic control for the generator. The implementation resulted in an unexpected turbine downpower (See Section 1R14 for details). This emergent work conflicted with a scheduled surveillance test of EDG 2-02 on November 3, 2004

- Rescheduling the surveillance testing of EDG 2-02 to November 4, 2004, in conjunction with scheduled maintenance on the turbine driven auxiliary feedwater pump governor valve and scheduled inspection of the condensate storage tank bladder

- Emergent work to replace the instrument air pressure regulator for the Unit 1 Steam Generator 2 Feedwater Flow Control Valve 1-FCV-520 concurrent with scheduled maintenance which required entry into the turbine generator exciter housing on November 12, 2004

- Emergent work to test and adjust the EDG 1-02 load setting which was rescheduled to Monday, November 29, 2004, from Thursday, December 2, 2004

- Scheduling of postmaintenance testing of the Steam Admission Valve 1-HV-2452-1 for the Unit 1 turbine driven auxiliary feedwater pump in series with activities on the main generator with heightened level of awareness due to increased risk of main generator trip (replacing exciter brushes and reestablishing generator primary water trips) on December 10, 2004

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions (71111.14)

.1 Unit 2 Downpower Due to Loss of Heater Drain Forward Flow During Calibration of Heater Drain Pump Recirculation Valve 2-FV-2589B

a. Inspection Scope

For the nonroutine event described below, the inspectors reviewed operator logs, procedure use, plant computer data, SMF-2004-3413-00, and interviewed operators to determine what occurred and to determine if the operator response was in accordance with plant procedures. The inspectors also reviewed the Plant Event Review Committee (PERC) meeting minutes.

b. Findings

Introduction. A Green self-revealing finding was identified for inadequate control of maintenance activities which resulted in the loss of heater drain forward flow to the

Unit 2 main feedwater pumps and subsequent reactor downpower to approximately 60 percent power to avoid a plant trip on loss of feedwater flow.

Description. On October 8, 2004, Unit 2 control room operators responded to a loss of heater drain forward flow by rapidly reducing turbine load from approximately 100 percent to approximately 60 percent. CPSES personnel were troubleshooting a failure of Heater Drain Pump 2-02 Recirculation Valve 2-FV-2589B to fully close. While attempting to perform a calibration on the associated electrical-to-pneumatic (I/P) converter (2-FV-2589B-IP1), the opposite Heater Drain Pump Recirculation Valve 2-FV-2589A unexpectedly opened, causing a loss of forward flow to the feedwater system. To avoid a plant trip, the control room operators reduced turbine power to 700 MWe.

Upon further review of the associated design documents (Drawings M2-2207 sheet 05 and M2-0207 sheet B), the maintenance technicians found that the I/P converter for Valve 2-FV-2589B was in series with the I/P converter for Valve 2-FV-2589A. When the circuit was broken by the technicians to install their test equipment, 2-FV-2589A failed open, diverting the heater drain flow from the main feedwater pumps and causing the transient.

Analysis. The performance deficiencies associated with this finding were (1) failure of CPSES personnel to adequately review the applicable design documents, (2) failure to translate the design into the station maintenance documents, and (3) failure to identify the interaction between the control circuit they were calibrating and the control circuit of the opposite heater drain recirculation valve. The finding is more than minor because it resulted in a plant transient, similar to example 4. b. of Appendix E to Manual Chapter 0612. The finding is associated with the human performance attribute and affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. The finding was processed through the significance determination process and determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. This event is documented in SMF-2004-3413-00.

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance because it occurred on non-safety related equipment: FIN 05000446/2004005-01, Unit 2 Downpower Due to Loss of Heater Drain Forward Flow During Calibration of 2-HV-2589B.

.2 Loss of Unit 2 Turbine Load Due to Missed Step in Transferring Control to Manual Hydraulic Control

a. Inspection Scope

For the nonroutine event described below, the inspector was in the control room during the restoration of the generator Phase A potential transformer inputs to the turbine control system and subsequent loss of turbine load. The inspector reviewed operator logs, procedure use, SMF-2004-3638-00 and SMF-2004-3644-00, and interviewed

operators to determine what occurred and determine if the operator response was in accordance with plant procedures. The inspector also reviewed the minutes from the associated PERC meeting.

b. Findings

Introduction. A Green self-revealing finding was identified for failing to follow the procedure to transfer turbine control from the electro hydraulic control (EHC) to the manual hydraulic control (MHC) which resulted in a Unit 2 turbine runback to 65 percent turbine load.

Description. On November 3, 2004, at 5:42 a.m., the Unit 2 turbine control system lost input from a main generator Phase A potential transformer, resulting in the turbine control valves moving to the full open position and increasing reactor power to 100.5 percent. The failure also caused several erratic indications and alarms, including the indicated turbine load cycling between 700 and 800 MWe. The operators entered abnormal procedure ABN-401 "Main Turbine Malfunction" which directed transfer of turbine control to MHC from EHC in accordance with SOP-401B, "Turbine Control Fluid System." While performing this action, the operators failed to perform step 5.3.4 C. 3 which would have set the speed target setpoint controller to 2100 rpm. The operators reduced turbine load and brought reactor power to less than 100 percent. The failure to set the speed target setpoint controller to 2100 rpm left the speed control section of EHC in a condition to affect the turbine control valve position.

At 6:30 p.m., while installing a modification to provide input to the turbine control system from another Phase A potential transformer, the speed control section of EHC ran turbine load to approximately 65 percent turbine load (725 MWe). The inspector was present in the control room and observed the operators' response to alarms and indications, use of abnormal and system operating procedures, communications and command and control of activities in the control room and in the turbine building. A subsequent PERC determined the event was caused by the missed procedure step. The speed control section of EHC had responded as designed.

Analysis. The performance deficiency associated with this finding was the failure to perform the required steps in SOP-401B while attempting to transfer the turbine control from EHC to MHC . The finding is more than minor because it resulted in a plant transient, similar to example 4. b. of Appendix E to Manual Chapter 0612. The finding is associated with the human performance attribute and affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. The finding was processed through the significance determination process and determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. If the transient had progressed to Mode 3 with a subsequent loss of auxiliary feedwater, the main feedwater system could have been reestablished and therefore remained available

to mitigate the consequences of the event because the heater drain system has no impact on the feedwater system in Mode 3. This event is documented in SMF-2004-3638-00 and SMF-2004-3644-00.

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance because it occurred on nonsafety-related equipment: FIN 05000446/2004005-02, Loss of Unit 2 Turbine Load Due to Missed Step in Transferring Control to Manual Hydraulic Control.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors selected four operability evaluations conducted by CPSES personnel involving risk-significant systems or components. The inspectors evaluated the technical adequacy of the licensee's operability determination, determined whether appropriate compensatory measures were implemented, and determined whether or not other pre-existing conditions were considered as applicable. Additionally, the inspectors evaluated the adequacy of the CPSES problem identification and resolution program as it applied to operability evaluations. Specific operability evaluations reviewed are listed below:

- Evaluation EVAL-2004-3620-01-00, to determine the acceptability of returning the Transformer XST2 to service with the High Side Neutral Bushing capacitance readings above the 252 picofarad level, reviewed on November 12, 2004

- Evaluation EVAL-2004-3836-01-00, to determine the operability of EDG 1-02 after failure of the diesel to load greater than 2.2 MWe, reviewed on December 2, 2004

- Evaluation EVAL-2004-2680-03-01, to determine the operability of the containment building with respect to the Steam Generator 1-03 Tubesheet Drain Valve 1-MS-664 seat leakage, reviewed on December 13, 2004

- SMF-2004-3970-01-00, evaluate suitability of Automatic Switch Company (ASCO) model NPL8316A54E solenoid valve as replacement part for ASCO model WJHTX831654E solenoid valve, reviewed on December 17, 2004

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

During the week of December 8, 2004, the inspectors reviewed the cumulative effects of

identified operator workarounds for potential of system misoperation, reliability, and availability. The inspectors evaluated the cumulative effects on multiple mitigating systems and the ability of the operators to respond in a correct and timely manner to plant transients and events.

On December 13, 2004, the inspector reviewed the course of action plan for the Centrifugal Charging Pump 1-01 seal leakage, as documented in the Plan of the Day, to determine if the functional capability of the system or human reliability in responding to an initiating event was affected. Specifically, the course of action was evaluated to determine the effect on the operator's ability to implement abnormal or emergency operating procedures. The system engineer and control room operators were interviewed to determine the recent history and current condition of the leakage, and the referenced SmartForms (SMF-2004-1715-00, SMF-2004-1731-00), and Course of Action COA-2004-1731-01-00 were reviewed.

In addition, compensatory actions for equipment problems, shift orders, and caution tags were reviewed to determine that CPSES personnel were identifying operator workarounds at an appropriate threshold and that the equipment problems were identified in the corrective action program.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors witnessed or reviewed the results of the postmaintenance tests for the following five maintenance activities:

- Unit 1 Train A Channel IV Containment Spray (HI-3) Test Input Relay 1-K456-A relay replacement in accordance with Work Order (WO) WO-4-04-156578-00 and OPT-447A, "Mode 1,3, and 4 Train A SSPS Actuation Logic Test," Revision 6, on October 22, 2004

- Unit 2 Train A Containment Spray Pump 2-03 motor breaker maintenance in accordance with WO-3-03-327744-01 and OPT-205B, "Containment Spray System," Revision 11, on November 9, 2004

- Replacement of the Instrument Air Compressor X-02 per FDA-01-000158-05 and tested in accordance with Procedure PPT-TP-04C-002, "Common Instrument Air Compressor/Dryer (CPX-CICACO-02/CPX-CIDYIA-02) Test," Revision 0, reviewed on November 17, 2004

- Replacement of Unit 2 containment personnel airlock inner and outer seals per WO 3-03-339388-01 and tested in accordance with OPT-802B, "Appendix J Leak

Rate Test of Personnel Airlock Door Seals," Revision 4, and OWI-801, "Operations Department Local Leak Rate Tests," Revision, on November 17, 2004

- Troubleshooting activities and replacement of the valve positioner, per WO 4-04-158538-00, for the Unit 1 Steam Generator 1-01 atmospheric relief valve and tested in accordance with OPT-605B, "SG Atmospheric Relief Valve Accumulator Check Valve Leak Test," Revision 3, and OPT-504A, "MS Section XI Valves," Revision 11, on November 18, 2004

In each case, the associated work orders and test procedures were reviewed in accordance with the inspection procedure to determine the scope of the maintenance activity and to determine if the testing was adequate to verify equipment operability.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors evaluated the adequacy of periodic testing of important nuclear plant equipment, including aspects such as preconditioning, the impact of testing during plant operations, and the adequacy of acceptance criteria. Other aspects evaluated included test frequency and test equipment accuracy, range, and calibration; procedure adherence; record keeping; the restoration of standby equipment; test failure evaluations; and the effectiveness of the licensee's problem identification and correction program. The following four surveillance test activities were observed and/or reviewed by the inspectors:

- Unit 1 Train A containment spray pump in accordance with OPT-205A, "Containment Spray System Operability Test," Revision 13, and OPT-454A, "Train A Safeguards Slave Relay K645 Actuation Test," Revision 3, on November 16, 2004

- Unit 2 Centrifugal Charging Pump 2-02 in accordance with OPT-201B, "Charging System," Revision 7, on November 23, 2004

- Unit 1 turbine driven auxiliary feedwater pump in accordance with OPT-206A, "AFW System," Revision 24, on December 3, 2004

- Unit 2 Safety Injection Pump 2-01 in accordance with OPT-204B, "SI System," Revision 10, on December 7, 2004

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the following temporary modification and associated documentation. The temporary modification was verified to be installed and administratively controlled in accordance with plant documentation and procedures.

- Compensatory actions for the failed potential transformer on Phase A of the Unit 2 generator output on November 3, 2004. The field work consisted of lifting leads and installing jumpers in the Phase A potential transformer Connection Box CP2-EPIBPP-01 to use the secondary voltage signal from the upper potential transformer to supply the original loads on the lower potential transformer. The inspector reviewed EVAL-2004-3638-01, screening for 10CFR50.59, minutes of the November 4, 2004, PERC meeting, WO-4-04-158323-00, and Station Administrative Procedure STA-422, "Processing SmartForms," Revision 19.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The inspector reviewed records of emergency plan and emergency action level changes that had been submitted during the past year, 2004. The inspector contacted the emergency preparedness manager to confirm that no changes had been made during 2004. The inspector completed one sample during this inspection.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Mitigation Systems Cornerstone

a. Inspection Scope

The inspector reviewed a sample of performance indicator (PI) data submitted by the licensee regarding the mitigating system cornerstone to verify that the licensee's data was reported in accordance with the requirements of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2. Reactor operator logs, limiting condition for operation action requirement logs, Smartforms SMF-2003-3878, SMF-2004-1000, SMF-2004-2344, SMF-2004-3314, and licensee event reports for October 2003 to September 2004, were reviewed for both Units 1 and 2 to identify safety system functional failures.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Semi-Annual Review

a. Inspection Scope

On December 23, 2004, the inspectors completed a semi-annual review of licensee internal documents, reports, audit, and performance indicators to identify trends that might indicate the existence of more safety significant issues. The inspectors reviewed the following types of documents:

- Corrective Action Documents
- System Health Reports
- Planned Maintenance Work Week Critiques
- CPSES Nuclear Overview Department (NOD) Evaluation Reports (Audits)
- System Engineering Performance Indicators October 2004
- Modification Team Business Plan
- Station Reliability Issues

b. Findings and Observations

No findings of significance were identified. However, during the review, the inspectors did note the following two items: 1) an adverse trend in human performance – two recent reactor downpower events, described in Sections 1R14.1 and 1R14.2, are

examples of this trend; and 2) an adverse trend in site personnel performing work on the wrong components. The inspectors did not identify any additional trends.

The inspectors determined that the licensee had adequately identified adverse trends and entered them into the corrective action program using an appropriate threshold.

.2 Daily Condition Report Review

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing the licensee's computerized corrective action program database (SMFs), reviewing hard copies of selected SMFs and attending related meetings such as PERC meetings.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

.1 (Closed) Licensee Event Report (LER) 50-446/03-002-00, Actuation of Auxiliary Feedwater System

On July 25, 2003, while CPSES Unit 2 was in Mode 1 and operating at 12 percent power, the licensee was returning to service a string of low pressure feedwater heaters which had been bypassed since July 9. During the evolution a low suction pressure trip of the only operating main feedwater pump occurred which resulted in an automatic start of both motor driven auxiliary feedwater pumps. The low pressure condition was caused by the existence of a void in the previously bypassed low pressure feedwater heater string. The inspector reviewed the LER and SMF-2003-2196-00 which documented the event and the resulting corrective actions. No findings of significance were identified. This event did not constitute a violation of NRC requirements. This LER is closed.

.2 (Closed) LER 50-446/03-005-00, Unit 2 Reactor Trip Due to Stroboscope Lamp Reflector Assembly Migrating into the Rectifier Wheel

a. Inspection Scope

The inspectors reviewed the LER and SMF-2003-4016-00, which documented the event, and the root cause analysis in the corrective action program to verify that the cause was identified and the corrective actions were appropriate. The generator, turbine and reactor trip were caused by the stroboscope reflector lamp assembly becoming dislodged and migrating into the rectifier wheel. This caused a phase-to-phase fault in

the main generator exciter which resulted in the turbine trip and a subsequent reactor trip. This review was performed on site during December 2004. The inspectors' response to the event is documented in NRC Inspection Report 50-445;446/2003004.

b. Findings

Introduction. A Green self-revealing finding for failure to properly reassemble the stroboscope reflector lamp assembly which resulted in a Unit 2 reactor trip was identified.

Description. On December 22, 2003, meter and relay technicians were inside the Unit 2 main generator exciter housing to collect monthly voltage and current data readings from the rotor shaft. While exiting the exciter housing, a technician inadvertently struck the "A" stroboscope assembly with the test probe. When the stroboscope assembly was struck, the lamp reflector became separated from the stroboscope assembly and was drawn by the air currents into the rectifier wheel. Contact with the reflector caused damage to exposed circuit elements (fuses, diodes, and diode leads), sparks and a phase-to-phase fault in the main generator exciter. The fault resulted in a main turbine trip and subsequent reactor trip.

CPSES personnel believed the cause of the event was improper reassembly of the stroboscope. The stroboscope lamp reflector was mounted to the rectifier wheel air guide cover using four cap screws and retaining clips. Inspection revealed that the cap screws and retaining clips for the lamp reflector were loose and the retaining clips were not properly oriented in their design position. The personnel who reassembled the stroboscope did not ensure that the retaining clips were sufficiently tight and oriented as required. The work instructions for assembly of the stroboscope were generic and vague. Corrective actions included enhancing the work instructions.

Analysis. The performance deficiency associated with this finding was failure of CPSES personnel to properly reassemble the stroboscope reflector lamp assembly. The finding is more than minor because it resulted in a plant transient, similar to example 4. b. of Appendix E to Manual Chapter 0612. The finding is associated with the human performance attribute and affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. The finding was processed through the significance determination process and determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. This event is documented in SMF-2003-4016-00.

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance because it occurred on non-safety related equipment: FIN 05000446/2004005-03, Unit 2 Reactor Trip Due to Stroboscope Lamp Assembly Migrating into the Rectifier Wheel. This LER is closed.

4OA4 Cross-Cutting Aspects of Findings

.1 A finding described in Section 1R14.1 of this report had, as its primary cause, human performance deficiencies, in that the maintenance personnel failed to adequately review the applicable design documents and failed to identify the interaction between the control circuit they were calibrating and the control circuit of the opposite heater drain recirculation valve, resulting in a turbine runback to 700 MWe.

.2 A finding described in Section 1R14.2 of this report had, as its primary cause, a human performance deficiency, in that the operators failed to perform all the required steps to transfer turbine control from EHC to MHC, resulting in a turbine runback to 65 percent power.

.3 A finding described in Section 4OA3.2 of this report had, as its primary cause, a human performance deficiency, in that personnel failed to properly assemble a main generator stroboscope lamp reflector, resulting in a trip of the Unit 2 generator, turbine and reactor on December 22, 2003.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The inspectors presented the integrated resident inspection results to Mr. M. Blevins, Senior Vice President and Chief Nuclear Officer, and other members of licensee management on January 6, 2005. The licensee acknowledged the findings presented. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Blevins, Senior Vice President & Chief Nuclear Officer
D. Bozeman, Manager, Emergency Planning
R. Flores, Vice President Operations
R. Kidwell, Licensing Engineer
T. Hope, Manager, Regulatory Performance
M. Lucas, Director of Nuclear Engineering
F. Madden, Manager, Regulatory Affairs
D. Weyandt, System Engineer
D. Wilder, Manager, Radiation and Industrial Safety, Radiation and Industrial Safety

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Opened and Closed

05000446/2004005-01	FIN	Unit 2 Downpower Due to Loss of Heater Drain Forward Flow During Calibration of 2-HV-2589B. (Section 1R14.1)
05000446/2004005-02	FIN	Loss of Unit 2 Turbine Load Due to Missed Step in Transferring Control to Manual Hydraulic Control (Section 1R14.2)
05000446/2004005-03	FIN	Unit 2 Reactor Trip Due to Stroboscope Lamp Assembly Migrating into the Rectifier Wheel (Section 4OA3.2)

Closed

05000446/03-002-00	LER	Actuation of Auxiliary Feedwater System (Section 4OA3.1)
05000446/03-005-00	LER	Unit 2 Reactor Trip due to Stroboscope Lamp Reflector Assembly Migrating into the Rectifier Wheel (Section 4OA3.2)

Discussed

NONE

DOCUMENTS REVIEWED

Section 40a2.1

NOD Evaluations

EVAL-2004-029
EVAL-2004-015
EVAL-2004-021
EVAL-2004-025

Smartforms

SMF-2004-0343-00
SMF-2004-0345-00
SMF-2004-2680-00, and 01
SMF-2004-2962-00
SMF-2004-3292-00
SMF-2004-3506-00
SMF-2004-3597-00
SMF-2004-3923-00
SMF-2004-4039-00

Section 1EP4

Comanche Peak Emergency Plan, Revision 31

LIST OF ACRONYMS

CFR	*Code of Federal Regulations*
CPSES	Comanche Peak Steam Electric Station
EDG	emergency diesel generator
EHC	electro hydraulic control
I/P	electrical to pneumatic
LER	Licensee Event Report
MHC	manual hydraulic control
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OPT	operability test
PERC	plant event review committee

PI	performance indicator
SMF	SmartForm
SOP	system operating procedure
SSC	structures, systems, or components
SSPS	solid state protection system
STA	station administrative procedure
WO	work order