



**TXU Electric**  
**Comanche Peak**  
**Steam Electric Station**  
P.O. Box 1002  
Glen Rose, TX 76043  
Tel: 254 897 8920  
Fax: 254 897 6652  
lterry1@txu.com

**C. Lance Terry**  
Senior Vice President & Principal Nuclear Officer

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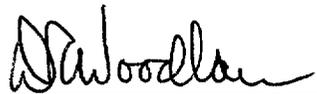
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES) – UNIT 2  
DOCKET NO. 50-446  
ENGINEERED SAFETY FEATURE ACTUATION  
LICENSEE EVENT REPORT 446/00-002-00**

Enclosed is Licensee Event Report (LER) 00-002-00 for Comanche Peak Steam Electric Station Unit 2, "Loss of Offsite Power to Transformer XST1 Caused Unit 2 Blackout Sequencer Actuation." This communication does not contain any new commitments pertaining to the CPSES license.

Sincerely,

C. L. Terry

By:   
D. R. Woodlan  
Docket Licensing Manager

OAB: oab  
Enclosure

cc: Mr. E. W. Merschoff, Region IV  
Mr. J. I. Tapia, Region IV  
Resident Inspectors, CPSES

JE22

NRC FORM 366 (4-95)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.
LICENSEE EVENT REPORT (LER)		

Facility Name (1) <b>COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2</b>	Docket Number (2) <b>05000446</b>	Page (3) <b>1 OF 5</b>
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Title (4)  
**LOSS OF OFFSITE POWER TO TRANSFORMER XST1 CAUSED UNIT 2 BLACKOUT SEQUENCER ACTUATION**

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Name	Docket Numbers
01	07	00	00	002	00	02	04	00	CPSES UNIT 1	05000445 05000

Operating Mode (9)	1	This report is submitted pursuant to the requirements of 10 CFR: (Check one or more) (11)								
Power Level (10)	100	20.2201 (b)	20.2203 (a) (2) (v)	50.73 (a) (2) (i)	50.73 (a) (2) (viii)					
		20.2203 (a) (1)	20.2203 (a) (3) (i)	50.73 (a) (2) (ii)	50.73 (a) (2) (x)					
		20.2203 (a) (2) (i)	20.2203 (a) (3) (ii)	50.73 (a) (2) (iii)	73.71					
		20.2203 (a) (2) (ii)	20.2203 (a) (4)	<input checked="" type="checkbox"/>	50.73 (a) (2) (iv)					
		20.2203 (a) (2) (iii)	50.36 (c) (1)		50.73 (a) (2) (v)					
		20.2203 (a) (2) (iv)	50.36 (c) (2)	50.73 (a) (2) (vii)	OTHER Specify in Abstract below or in NRC Form 366A					

Licensee Contact For This LER (12)	
Name <b>M. L. Lucas - Maintenance Manager</b>	Telephone Number (Include Area Code) <b>(254)897-6731</b>

Complete One Line For Each Component Failure Described in This Report (13)									
Cause	System	Component	Manufacturer	Reportable To NPRDS	Cause	System	Component	Manufacturer	Reportable To NPRDS
				N					

Supplemental Report Expected (14)				EXPECTED SUBMISSION DATE (15)	Month	Day	Year
YES <small>(If YES, complete EXPECTED SUBMISSION DATE)</small>	<input checked="" type="checkbox"/>	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 7, 2000 at approximately 6:07 p.m., Comanche Peak Steam Electric Station (CPSES) experienced a loss of power to transformer XST1, which is the preferred offsite power sources to CPSES Unit 2 class 1E busses. CPSES Unit 2 temporarily lost power to Train A and Train B safeguard busses due to automatic transfer to the alternate offsite power source. This loss of power to XST1 caused a signal to be sent to the Train A and Train B Blackout Sequencer to realign the engineered safety feature equipment.

The cause of the loss of the transformer XST1 (EIIS: (XMER)(EB)) was due to a directional ground relay that had its directional contact out of adjustment so that it was in the closed position. With the directional contact closed, CPSES breakers 7030 and 7040 opened prematurely due to a ground fault on an incoming feeder line, deenergizing XST1. The ground fault was cleared, and the Unit was aligned properly.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1) COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2	Docket 05000446	LER Number (6)			Page(3)
		Year	Sequential Number	Revision Number	
		00	002	00	2 OF 5

Text (If more space is required, use additional copies of NRC Form 366A) (17)

### I. DESCRIPTION OF THE REPORTABLE EVENT

#### A. REPORTABLE EVENT CLASSIFICATION

Any event or condition that resulted in a manual or automatic actuation of an Engineered Safety Feature (ESF)(EIS: (JG)).

#### B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On January 7, 2000, prior to the event, Comanche Peak Steam Electric Station Unit 2 was in Mode 1, Power Operations.

#### C. STATUS OF STRUCTURES, SYSTEMS, OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

There were no inoperable structures, systems, or components that contributed to the event.

#### D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIME

On January 7, 2000 at approximately 6:07 p.m., Comanche Peak Steam Electric Station (CPSES) experienced a loss of power to transformer XST1, which is the preferred offsite power sources to class 1E busses for CPSES Unit 2. CPSES Unit 2 temporarily lost power to the Train A and Train B safeguard busses due to the automatic transfer to the alternate offsite power source. This momentary loss of power to XST1 caused a signal to be sent to the Train A and Train B Blackout Sequencer (BOS) to reload the engineered safety feature equipment onto their safeguard busses. XST1 was lost at approximately at 6:07 p.m., on January 7, 2000 and was restored on 00:22 a.m., on January 8, 2000. The BOS actuation is an ESF actuation.

An event or condition that results in an automatic actuation of any ESF, including the Reactor Protection System, is reportable within 4 hours pursuant to the requirements of 10CFR50.72(b)(2)(ii). At approximately 9:24 p.m., January 7, 2000, the Nuclear Regulatory Commission Operations Center was notified of the event via the Emergency Notification System.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1) COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2	Docket 05000446	LER Number (6)			Page(3)
		Year	Sequential Number	Revision Number	
		00	002	00	3 OF 5

Text (If more space is required, use additional copies of NRC Form 366A) (17)

**E. THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE, OR PROCEDURAL OR PERSONNEL ERROR**

Alarms in the control room indicated a loss of power to transformer XST1.

**II. COMPONENT OR SYSTEM FAILURES**

**A. FAILED COMPONENT INFORMATION**

Directional ground relay for breakers 7030 and 7040.  
Model # JBCG  
Manufacturer – General Electric.

**B. FAILURE MODE, MECHANISM, AND EFFECT OF EACH FAILED COMPONENT**

It was found that the directional ground relay contact adjustment screw was loose allowing the directional contact to drift closed. The closed contact made the relay non-directional and allowed it to operate instantaneously for this fault outside its zone of protection.

**C. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE**

It was found that the directional ground relay contact adjustment screw was loose allowing the directional contact to drift closed. The closed contact made the relay non-directional and allowed it to operate instantaneously for this fault outside its zone of protection.

**D. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS**

Although the directional ground relay does not have multiple functions, the directional ground relay at Comanche Peak on breakers 7030 and 7040 had its directional contact out of adjustment so that it was in the closed position. With the directional contact closed, breakers 7030 and 7040 opened prematurely due to a ground fault on an incoming feeder line. With the trip on breakers 7030 and 7040, XST1 lost connection with the system.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1)  COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2	Docket  05000446	LER Number (6)			Page(3)  4 OF 5
		Year	Sequential Number	Revision Number	
		00	002	00	

Text (If more space is required, use additional copies of NRC Form 366A) (17)

### III. ANALYSIS OF THE EVENT

#### A. SAFETY SYSTEM RESPONSES THAT OCCURRED

The appropriate safety systems actuated automatically as a result of the event. The Blackout Sequencer actuated as designed upon detection of the loss of preferred offsite power and reloaded the safeguards busses as designed. All components operated as designed upon receipt of the Blackout Sequencer signal.

In addition to the normally operating loads, the BOS (EIS: (34)(EA)) also actuated the Train A and Train B motor-driven and the turbine-driven auxiliary feed water pumps as designed.

#### B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable - no safety system trains were declared inoperable. XST1 was lost at approximately at 6:07 p.m., on January 7, 2000 and was restored on 00:22 a.m., on January 8, 2000.

#### C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

Operability of the Engineered Safety Features Actuation System (ESF) (EIS:(JE)) is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The blackout sequencer (BOS) functions to reload the associated 6.9kv safeguards bus in a pre-established sequence following an undervoltage condition on the bus after the bus has been re-energized from the alternate power source or the emergency diesel generator. During the actuation, which occurred on January 7, 2000, offsite power remained available and all components functioned as described in the FSAR.

Because main feedwater remained available, the actuation of the Auxiliary Feedwater System was not required. The reactor operators secured the system and restored the plant equipment to the normal operating alignment.

On the basis that; (1) the BOS was not required to mitigate the consequences of an actual loss of power, and (2) all components operated as designed. The loss of the preferred offsite power source and the subsequent ESF actuation did not affect the health and safety of the public.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1) <b>COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2</b>	Docket <b>05000446</b>	LER Number (6)			Page(3)
		Year	Sequential Number	Revision Number	
		00	002	00	5 OF 5

Text (If more space is required, use additional copies of NRC Form 366A) (17)

#### IV. CAUSE OF THE EVENT

The directional ground relay at Comanche Peak on breakers 7030 and 7040 had its directional contact out of adjustment so that it was in the closed position. With the directional contact closed, breakers 7030 and 7040 opened prematurely due to a ground fault on an incoming feeder line. Operation of breakers 7030 and 7040 removed XST1 from the system.

It was concluded that the directional contact was out of adjustment. It appears that the technicians who last performed its functional test(s) did not tighten the adjustment screw properly.

#### V. CORRECTIVE ACTION

The directional ground relay contact was adjusted. The ground fault was cleared and the Unit was aligned properly. Potentially similar directional ground relays were visually inspected to verify that their directional contacts were not out of adjustment such that it could be in the closed position. No contacts were found out of position and no concerns were noted. Although the exact time frame as to when the directional contact for the directional ground relay on breakers 7030 and 7040 became out of adjustment could not readily be determined, TXU Electric believes that this is an isolated occurrence. Current training requirements for personnel who perform work in the switchyard includes self-verification training.

#### VI. PREVIOUS SIMILAR EVENTS

There have been other CPSES Licensee Event Reports involving the BOS actuation. However, details/causes of the previously reported events are sufficiently different from the event described in this LER such that the previous corrective actions could not have prevented this event.