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CP-201000603
Log # TXX-10063

Ref. # 10CFR50.73(a)(2)(iv)(A)

June 7, 2010

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

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NOS. 50-445 and 50-446
LOSS OF XST1 DUE TO BREAKERS 7030 AND 7040 OPENING AS A RESULT OF A B-PHASE TO GROUND FAULT
LICENSEE EVENT REPORT 446/10-001-00

Dear Sir or Madam:

Pursuant to 10CFR50.73(a)(2)(iv)(A), Luminant Generation Company LLC (Luminant Power) hereby submits enclosed Licensee Event Report (LER) 446/10-001-00, "Loss of XST1 Due to Breakers 7030 and 7040 Opening As a Result of a B-Phase to Ground Fault." This event did not result in a safety system functional failure. This event did not affect the health and safety of the public or plant personnel.

This communication contains no licensing basis commitments regarding Comanche Peak Units 1 and 2.

Should you have any questions, please contact Ms. Tamera J. Ervin-Walker at (254)897-6902.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: 

Fred W. Madden

Director, Oversight & Regulatory Affairs

TJEW
Enclosure

c - E. E. Collins, Region IV
Balwant Singal, NRR
Resident Inspectors, Comanche Peak

A member of the STARS (Strategic Teaming and Resource Sharing) Alliance

Callaway · Comanche Peak · Diablo Canyon · Palo Verde · San Onofre · South Texas Project · Wolf Creek

JE22
NRK

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Comanche Peak Nuclear Power Plant (CPNPP) Unit 2

2. DOCKET NUMBER

05000 446

3. PAGE

1 OF 5

4. TITLE

LOSS OF XST1 DUE TO BREAKERS 7030 AND 7040 OPENING AS A RESULT OF A B-PHASE TO GROUND FAULT

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCUMENT NUMBER
04	12	2010	2010	-- 001 --	0	06	07	2010	CPNPP Unit 1	05000 445
									FACILITY NAME	DOCUMENT NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)											
1	<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(i)(C)	<input type="checkbox"/>	50.73(a)(2)(vii)				
	<input type="checkbox"/>	20.2201(d)	<input type="checkbox"/>	20.2203(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(ii)(A)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)				
	<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(ii)(B)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)				
	<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	50.36(c)(1)(i)(A)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)(A)				
10. POWER LEVEL	<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)(A)	<input type="checkbox"/>	50.73(a)(2)(x)				
	<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(v)(A)	<input type="checkbox"/>	73.71(a)(4)				
	<input type="checkbox"/>	20.2203(a)(2)(iv)	<input type="checkbox"/>	50.46(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(v)(B)	<input type="checkbox"/>	73.71(a)(5)				
	<input type="checkbox"/>	20.2203(a)(2)(v)	<input type="checkbox"/>	50.73(a)(2)(i)(A)	<input type="checkbox"/>	50.73(a)(2)(v)(C)	<input type="checkbox"/>	OTHER				
	<input type="checkbox"/>	20.2203(a)(2)(vi)	<input type="checkbox"/>	50.73(a)(2)(i)(B)	<input type="checkbox"/>	50.73(a)(2)(v)(D)	<input type="checkbox"/>	VOLUNTARY LER				
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>					

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Timothy A. Hope, Nuclear Licensing Manager

TELEPHONE NUMBER (Include Area Code)

254-897-6370

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH DAY YEAR

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

On April 12, 2010 at approximately 0720, CPNPP experienced a phase-to-ground fault between Startup Transformer XST1 and the 138kV switchyard while Unit 2 was operating at 100% power and Unit 1 was off-line for refueling. Alarms were received in the Unit 2 control room indicating that Startup Transformer XST1 was de-energized, which caused a slow transfer of the Unit 2 Class 1E buses to XST2. The Unit 2 blackout sequencers actuated, and the Unit 2 motor-driven feedwater pumps and turbine-driven auxiliary feedwater water pump automatically started. The reactor operator reduced turbine load by 50 mega-watts electric. Spent Fuel Pool (SFP) cooling pumps, common to both Units, were load shed by design due to Unit 2 blackout sequencer actuation, and subsequently restarted by procedure. Investigation determined a B-phase insulator on a 138kV transmission tower had black marks and foreign material hanging down. Eight hours later the insulator was replaced and XST1 was restored as the preferred offsite power source to the Unit 2 Class 1E buses.

All times in this report are approximate and are Central Daylight Time unless noted otherwise.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME Comanche Peak Nuclear Power Plant Unit 2	2. DOCKET 05000 - 446	6. LER NUMBER			3. PAGE 2 OF 5
		YEAR	SEQUENTIAL NUMBER	REV NO.	
		2010	-- 001 --	00	

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

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION:

10CFR50.73(a)(2)(iv)(A) "Any event or condition that resulted in a manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)."

B. PLANT CONDITION PRIOR TO EVENT:

On April 12, 2010, Comanche Peak Nuclear Power Plant (CPNPP) Unit 1 was de-fueled as part of the 1RF14 refueling outage and CPNPP Unit 2 was in Mode 1 operating at 100% power.

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 TIMES:

On April 12, 2010, Comanche Peak Nuclear Power Plant (CPNPP) Unit 1 was de-fueled as part of the 1RF14 refueling outage and CPNPP Unit 2 was in Mode 1 operating at 100% power. At 0720, CPNPP experienced a loss of power to startup transformer XST1 [EIS: (XFMR)] which is the preferred offsite power source to the Unit 2 Class 1E buses and the alternate power source for Unit 1. The Control Room (CR) Operators (Utility, Licensed) entered Technical Specification (TS) 3.8.1 Limiting Condition for Operation (LCO), Condition A for one required source of offsite power inoperable.

Unit 2 momentarily lost power to the Trains A and B safeguards buses during the automatic transfer to the alternate offsite power source. The loss of power to XST1 caused a signal to be sent to the Unit 2 Trains A and B Blackout Sequencers (BOSs) [EIS: (JE)]. The BOSs then started the Unit 2 engineered safety feature equipment, including both motor-driven Auxiliary Feedwater (AFW) pumps [EIS: (BA)] and the Turbine-Driven AFW pump [EIS: (BA)]. CR Operators (Utility, Licensed) responded and reduced the Unit 2 output power by 50 mega-watts electric. Furthermore, the Spent Fuel Pool (SPF) cooling pumps [EIS: (DA)] which are common to both Units 1 and 2 were automatically load shed by the BOS as designed.

The SFP pumps are common to both Units and were shutdown as designed. At that time, the Unit 1 core was off loaded into the SPF with a time to boil of 6.4 hours. The SFP cooling pumps were restored by procedure within six minutes.

During this event, CPNPP equipment operators (Utility, Non-Licensed) were observing the satisfactory starts on various safeguard equipment; however, the equipment operators reported vapor in the vicinity of the outboard pump shaft packing in the area of the Unit 2, Train A, motor-driven AFW pump. Not knowing the exact condition of the motor-driven AFW pump, the CR Operators (Utility, Licensed) conservatively entered TS LCO 3.7.5, Condition B for one Train of AFW inoperable.

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Per 10CFR50.72(b)(3)(iv)(A), CR Operators (Utility, Licensed) made an eight hour notification to the Nuclear Regulatory Commission (NRC) to make them aware of the plant condition as it was known at that time.

An engineering evaluation was performed on the Unit 2 motor-driven AFW pump with vendor input and determined that the vapor was steam and it was not detrimental to the packing or the pump. The motor-driven AFW pump was then tested and no abnormalities were found. The motor-driven AFW pump was declared OPERABLE and the LCO exited at 1539 the same day.

The XST1 transformer was lost when switchyard breakers 7030 and 7040 opened due to a phase to ground fault across a transmission tower insulator between the 138kV (kilo-volt) switchyard and XST1. Approximately eight hours later, the insulator was replaced and XST1 was restored as the preferred offsite power source to Unit 2 and the alternate offsite power source for the Unit 1 Class 1E Buses.

The system response of Unit 1 and Unit 2 and the operator actions were consistent with plant design and the supporting analyses presented in the CPNPP Final Safety Analysis Report (FSAR).

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

Control board indications and alarms alerted the reactor operators (Utility, Licensed) in both Units that XST1 was de-energized, and in Unit 2 that the blackout sequencers actuated and the motor-driven feedwater pumps and turbine-driven auxiliary feedwater water pump automatically started.

II. COMPONENT OR SYSTEM FAILURES

A. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Not applicable – No component or system failures were identified during this event.

B. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT

Not applicable – No component failures were identified during this event.

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

Not applicable – No component failures were identified during this event.

D. FAILED COMPONENT INFORMATION

Not applicable – No component failures were identified during this event.

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YEAR	SEQUENTIAL NUMBER	REV NO.							
2010	-- 001 --	00							

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

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

On Unit 2, both motor-driven Auxiliary Feedwater Pumps and the Turbine-Driven Auxiliary Feedwater Pump started as expected.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

The Unit 2, Train A motor-driven AFW pump was removed from service when unusual indications (steam) were noticed coming from the outboard bearing area after the pump start. Conservatively, the pump was disabled and Technical Specification 3.7.5 was entered until the indications could be understood. The pump was then restored eight hours and nine minutes later.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

Unit 2 momentarily lost power to the Trains A and B safeguards buses during the automatic transfer to the alternate offsite power source. The loss of power to XST1 caused a signal to be sent to the Unit 2 Trains A and BOSs. The BOSs then started the Unit 2 engineered safety feature equipment, including both motor-driven Auxiliary Feedwater pumps and the Turbine-Driven AFW pump. There was no disruption in the non-safeguards loads required for normal plant operations because normal plant operations are unaffected by the loss of the 138 kV switchyard. This event involved an increase in heat removal by the AFW system and is bounded by the CPNPP Final Safety Analysis Report (FSAR) section 15.1, "Increase in Heat Removal by the Secondary System."

The Spent Fuel Pool (SPF) cooling pumps, common to both Units, were automatically load shed by the BOSs as designed and then restored within 6 minutes by procedure. At the time the SFP pumps were shutdown, the Unit 1 core was off loaded into the SPF with a time to boil of 6.4 hours. The temperatures in SPF pools 1 and 2 increased by 1.4 and 1.0 degree Fahrenheit, respectively, and thus, there was minimal impact on SFP temperature.

Approximately 8 hours later, the transmission insulator was replaced and XST1 was restored as the preferred offsite power source to Unit 2 and the alternate offsite power source for the Unit 1 Class 1E Buses.

All safety systems responded as designed.

Based on the above, it is concluded that the health and safety of the public were unaffected by this condition and this event has been evaluated to not meet the definition of a safety system functional failure per 10CFR50.73(a)(2)(v).

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IV. CAUSE OF THE EVENT

Investigation determined that the phase B insulator on a 138kV transmission tower between XST1 and the 138kV switchyard had black marks and foreign material hanging down on the north side of the insulator. The foreign material turned out to be a vine that contacted the top and bottom skirt of the insulator, precipitating the fault. The vine was brought to the insulator's mounting adaptor by a bird for nest building. The design of the mounting adapter used as a connection mechanism between the under-slung insulators and tower pedestal allows birds to use the mounting adapter openings as sites for nest building. The nest building material came in contact with the top and bottom skirt of the phase B insulator on the 138kV line.

V. CORRECTIVE ACTIONS

Immediate actions included replacement of the insulator and restoration of XST1 as the preferred offsite power source to the Unit 2 Class 1E buses. The insulator mounting adapters will be modified to reduce the probability of nest building.

VI. PREVIOUS SIMILAR EVENTS

There have been no previous similar reportable events at CPNPP in the last three years.