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May 23, 1994

William J. Cahill, Jr.
Group Vice President

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

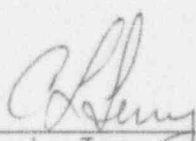
SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES) - UNIT 2
DOCKET NO. 50-446
REACTOR PROTECTION SYSTEM ACTUATION
LICENSEE EVENT REPORT 446/94-004-00

Gentlemen:

Enclosed is Licensee Event Report 94-004-00 for Comanche Peak Steam Electric Station Unit 2, "Reactor Protection System Actuation due to a Spike on Source Range."

Sincerely,

William J. Cahill, Jr.

By: 
C. L. Terry
Vice President of Nuclear Operations

OB:clc

Enclosure

cc: Mr. L. J. Callan, Region IV
Resident Inspectors CPSES

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NRC FORM 366		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED OMB NO. 150-0104 EXPIRES: 4/30/92					
<h1>LICENSEE EVENT REPORT (LER)</h1>				ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC, 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC, 20503.					
Facility Name (1) COMANCHE PEAK-UNIT 2			Docket Number (2) 05000446		Page (3) 1 OF 4				
Title (4) REACTOR PROTECTION SYSTEM ACTUATION DUE TO A SPIKE ON SOURCE RANGE									
Event Date (5)		LER Number (6)		Report Date (7)					
Month	Day	Year	Year	Sequential Number	Revision Number				
04	22	94	94	004	00				
				Other Facilities Involved (8)					
				Facility Names	Docket Numbers				
				N/A	050000				
				N/A	050000				
Operating Mode (9) 3		This report is submitted pursuant to the requirements of 16 CFR 9: (Check one or more of the following) (11)							
Power Level (10) 000		<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)				
		<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 60.36(c)(1)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)				
		<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 60.36(c)(2)	<input type="checkbox"/> 60.73(a)(2)(vii)	Other (Specify in Abstract below and in Text, NRC Form 366A)				
		<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 60.73(a)(2)(i)	<input type="checkbox"/> 60.73(a)(2)(viii)(A)					
		<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(viii)(B)					
		<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(x)					
Name RAFAEL FLORES SHIFT OPERATIONS MANAGER				Area Code 817	Telephone Number -897-5590				
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)									
<input type="checkbox"/> Yes (if yes, complete Expected Submission Date)				<input checked="" type="checkbox"/> No					
				Expected Submission Date (15)	Month	Day	Year		
Abstract (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)									
<p>On April 22, 1994, while performing the actuation logic and master relay testing of Train B solid State Protection System (SSPS), an inadvertent reactor trip occurred due to the failure of Source Range N32 to deenergize when Train B SSPS input error inhibit switch was placed in inhibit. N32 spiked to greater than the source range trip setpoint causing reactor trip breaker "A" and bypass trip breaker "B" to open.</p> <p>The event was most likely caused by a faulty relay from the SSPS which had an abnormally high resistance for a closed contact due to some oxidation buildup on the contacts.</p> <p>Corrective actions were to replace the relay.</p>									

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC. 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC. 20503.

Facility Name (1)

Docket Number (2)

LER Number (6)

Page (3)

COMANCHE PEAK-UNIT 2

0|5|0|0|0|4|4|6

Year	Sequential Number	Revision Number
9 4	- 0 0 4	- 0 0

2 OF 4

Text (if more space is required, use additional NRC Form 366A's) (17)

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

An event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, including the Reactor Protection System.

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On April 22, 1994, during its midcycle outage at 12:14 a.m., Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 3, Hot Standby, with control rods inserted and shutdown banks withdrawn. The Reactor Coolant System (RCS) (EIIS:(AB)) was at a temperature of 558 degrees Fahrenheit and pressure of 2242 pounds per square inch-gage (PSIG). Centrifugal Charging Pump -02 (CCP-02) (EIIS:(P)(CB)) was running, taking suction from the Volume Control Tank (VCT) (EIIS:(TK)(CB)).

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

Train B Solid State Protection System (SSPS) was inoperable because of scheduled testing.

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

The Train B SSPS surveillance test was initiated on April 21, 1994 at 11:45 p.m..

The SSPS logic portion of the surveillance test was initiated in the control room at the Train B SSPS cabinet by the Unit Supervisor (US) (utility licensed) and the Reactor Operator (RO) (utility licensed). As part of the test, SSPS normally deenergizes N32 (EIIS: (CHA)(JC)) source range instrumentation. The N32 source range instrumentation did not deenergize as later confirmed by the N32 control board indicator, chart recorder, and plant computer printout. The Reactor Protection System actuated on April 22, 1994 at 12:14 a.m., tripping the reactor.

On April 22, 1994 at approximately 3:52 a.m., the Nuclear Regulatory Commission was notified of the event via the Emergency Notification in accordance with 10CFR50.72.

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

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Facility Name (1) COMANCHE PEAK-UNIT 2	Docket Number (2) 051000446	LER Number (6)			Page (3)	
		Year 94	Sequential Number 004	Revision Number 00	3	OF 4

Text (if more space is required, use additional NRC Form 366A's) (1.7)

II. COMPONENT OR SYSTEM FAILURES

A. FAILURE MODE, MECHANISM, AND EFFECT OF EACH FAILED COMPONENT

The failure of the source range high voltage cutout circuitry is the most likely cause for the source range signal to go high momentarily causing a reactor trip on source range high level.

B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

The control voltage was most likely affected by an increase in the contact resistance of the Reactor Protection System control relay which could result from an oxidation buildup.

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

The high voltage cutout of source range N32 instrumentation was affected.

D. FAILED COMPONENT INFORMATION

Manufacturer: Westinghouse
Part Name: Relay, 48 VDC (K270)
Part No.: 156-14D200

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

The Source Range reactor trip actuation opened the reactor trip breakers, resulting in the insertion of the shutdown banks. The feedwater preheater bypass valves closed on the Train A feedwater isolation signal.

The flux doubling actuation automatically shifted centrifugal charging pump suction from the Volume Control Tank to the Refueling Water Storage Tank by closing the VCT outlet isolation valves and opening the RWST suction valves.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Train B SSPS was inoperable for approximately four hours and sixteen minutes due to scheduled testing and subsequent reactor trip.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Facility Name (1)	Docket Number (2)	LER Number (6)			Page (3)	
COMANCHE PEAK-UNIT 2	0 5 0 0 0 4 4 6	Year	Sequential Number	Revision Number	4	OF 4
		9 4	- 0 0 4	- 0 0		

Text if more space is required, use additional NRC Form 366A's (17)

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

The inadvertent actuation occurring on April 22, 1994 resulted in the automatic initiation of all actions required for the system to perform its design function. It is concluded that the event did not adversely affect the safe operation of CPSES Unit 2 or the health and safety of the public.

IV. CAUSE OF THE EVENT

The failure of the relay in the source range high voltage cutout circuitry is the most likely cause for the source range signal to go high momentarily causing a reactor trip on source range high level. Discussions with the vendor concluded that the relay from the SSPS had an abnormally high resistance for a closed contact due to some oxidation buildup on the contacts.

V. CORRECTIVE ACTIONS

A work order was issued, and the SSPS relay for Train B high voltage cutout was replaced.

VI. PREVIOUS SIMILAR EVENTS

There have been other events which involve flux doubling circuitry; however, the root causes of those events were unrelated to the root cause of this event. The corrective action taken to resolve the root causes of the previous events would not have prevented this event.

VII. ADDITIONAL INFORMATION

The times listed in the report are approximate and Central Daylight Time.