TU ELECTRIC

Log # TXX-92102
File # 10200
Ref. # 50.73
50.73(a)(2)(iv)

March 19, 1992

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)
DOCKET NO. 50-445
REACTOR PROTECTION SYSTEM ACTUATION
LICENSEE EVENT REPORT 92-005-00

Gentlemen:

Enclosed is Licensee Event Report 92-005-00 for Comanche Peak Steam Electric Station Unit 1, "Personnel Error Leading to Engineered Safety Feature Actuation During Performance of Surveillance Testing."

Sincerely,

William J. Cahill, Jr.

William J. Cahill, Jr.

By: Roger D. Walker

R. D. Walker
Manager of Nuclear Licensing

OB/tg

c - Mr. R. D. Martin, Region IV
Resident Inspectors, CPSES(2)

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Enclosure to TXX-92102

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	1 OF 0 7

Title (4): PERSONNEL ERROR LEADING TO ENGINEERED SAFETY FEATURE ACTUATION DURING PERFORMANCE OF SURVEILLANCE TESTING

Event Date (5) Month	Day	Year	LER Number (6) Year	Sequential Number	Revision Number	Report Date (7) Month	Day	Year	Other Facilities Involved (8) Facility Names	Docket Numbers
0 2	1 8	9 2	9 2	- 0 0 5 -	0 0	0 3	1 9	9 2	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

Operating Mode (9): 1

Power Level (10): 1 0 0

This report is submitted pursuant to the requirements of 10 CFR §: (Check one or more of the following) (11)

☐ 20.402(b)	☐ 20.405(c)	☒ 50.73(a)(2)(iv)	☐ 73.71(b)
☐ 20.405(a)(1)(i)	☐ 50.36(c)(1)	☐ 50.73(a)(2)(v)	☐ 73.71(c)
☐ 20.405(a)(1)(ii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(vii)	☐ Other (Specify in Abstract below and in Text, NRC Form 366A)
☐ 20.405(a)(1)(iii)	☐ 50.73(a)(2)(i)	☐ 50.73(a)(2)(viii)(A)	
☐ 20.405(a)(1)(iv)	☐ 50.73(a)(2)(ii)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.405(a)(1)(v)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(x)	

Licensee Contact For This LER (12)

Name	Telephone Number
D.E. BUSCHBAUM COMPLIANCE SUPERVISOR	Area Code 8 1 7 8 9 7 - 5 8 5 1

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

Supplemental Report Expected (14)		Expected Submission Date (15)	Month	Day	Year
☐ Yes (If yes, complete Expected Submission Date)	☒ No				

Abstract (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On February 18, 1992, a reactor operator was performing slave relay testing activities to partially satisfy Technical Specification Surveillance requirements for the engineered safety features actuation system instrumentation and the auxiliary feedwater system. The operator misinterpreted a procedure step and inadvertently unblocked the actuation signal which had been blocked in a previous procedure step. Upon performance of the next procedure step, all four feedwater split flow bypass valves closed. The cause of the event was personnel error. Corrective action included event review and training.

NRC FORM 366A U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
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.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Facility Name (1)	Docket Number (2)	LER Number (6) Year	Sequential Number	Revision Number	Page (3)
COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	9 2	- 0 0 5 -	0 0	0 2 OF 0 7

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 the manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System.

B. PLANT OPERATING CONDITIONS BEFORE THE EVENT

On February 18, 1992, just prior to the event, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 1, Power Operation, with the reactor at 100 percent of rated thermal 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 February 18, 1992, at approximately 1200 CST, the CPSES Unit 1 Balance of Plant (BOP) Reactor Operator (utility, licensed) was performing Train A slave relay testing activities. The test in progress at the time of the event is performed to partially satisfy the surveillance requirements of Technical Specifications 4.3.2.1.6 for the ESF actuation system (EIIS:(JE)) instrumentation and 4.7.1.2.b.1 for the Auxiliary Feedwater System (EIIS:(BA)) by verifying the operability of Train A Slave Relay K610 in the Solid State Protection System (EIIS:(JC)). The reactor operator did not have previous experience performing this test procedure.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Facility Name (1)	Docket Number (2)	LER Number (6) Year	Sequential Number	Revision Number	Page (3)
COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	9 2	- 0 0 5	- 0 0	0 3 OF 0 7

While performing the test procedure, the reactor operator encountered a conditional procedure step which he misunderstood. His misinterpretation of the intent of the step resulted in the inadvertent unblocking of a previously blocked safety injection actuation signal. When the reactor operator performed the next procedure step, slave relay K610 (EIIS:(RLY)) actuated resulting in the auto-closure of all four feedwater split flow bypass valves (EIIS:(FCV)(SJ)).

Various alarms and indications were immediately observed by Control Room personnel, and following discovery of the mispositioned signal blocking switch, the affected systems were restored in accordance with plant procedures. At approximately 1359, the NRC was notified of the ESF actuation via the Emergency Notification System as required by 10CFR50.72.

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

Closure of the feedwater split flow bypass valves resulted in hi flow alarms for steam generator nozzle flow on feedwater loops 1 through 4. The cause of the alarms was confirmed by position indication lights on the handswitches for the 4 split flow by-pass valves. The reason for the undesired valve closure was identified by Control Room personnel immediately following the event.

II. COMPONENT OR SYSTEM FAILURES

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

There were no failed components associated with this event.

B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

There were no failed components associated with this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Facility Name (1)	Docket Number (2)	LER Number (6) Year	Sequential Number	Revision Number	Page (3)
COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	9 2	- 0 0 5	- 0 0	0 4 OF 0 7

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

There were no failed components associated with this event.

D. FAILED COMPONENT INFORMATION

There were no failed components associated with this event.

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

The feedwater split flow bypass valves closed upon actuation of slave relay K610.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

There were no safety systems or components rendered inoperable during or as a result of the event.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

The feedwater split flow bypass valves (FSBV in Figure 1) close on an auxiliary feedwater actuation signal to ensure that auxiliary feedwater flow enters the steam generators through the upper feed nozzles. During normal plant operation the FSBVs divert a portion of the feedwater flow to the upper feed nozzles to temper the flow to the upper portion of the steam generators and to maintain the feedwater flow velocity of the lower nozzles within vendor limits.

Extended operation with the FSBVs closed can result in excessive vibration in the preheater section of the steam generators with the potential for fatigue failure of steam generator tubes. Operation with high feed flow to the lower nozzles for the brief period during the event on February 18, 1992, was of insufficient duration to initiate the type of damage of concern. It is concluded that the event did not adversely impact the safe operation of CPSES Unit 1 or the health and safety of the public.

Enclosure to TXX-92102

NRC FORM 366A U.S. NUCLEAR REGULATORY COMMISSION

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COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	9 2	- 0 0 5 -	0 0	0 5 OF 0 7

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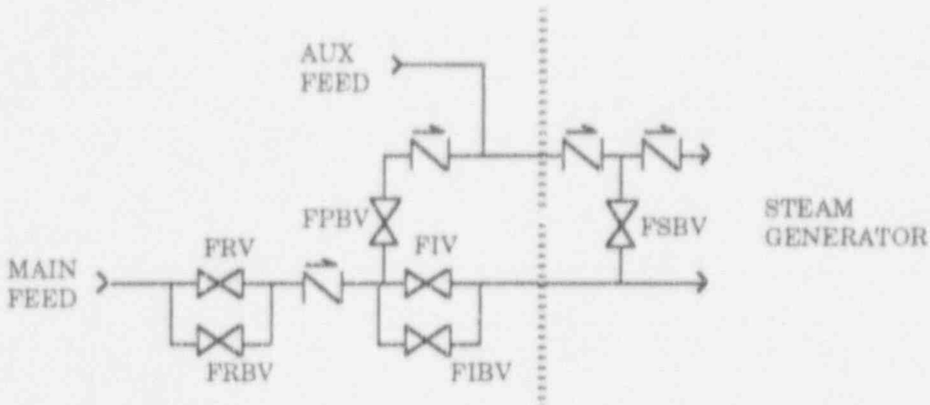

FSBV = Feed Split Flow Bypass Valve
FRV = Feed Regulating Valve
FRBV = Feed Regulating Bypass Valve
FIV = Feed Isolation Valve
FIBV = Feed Isolation Bypass Valve
FPBV = Feed Preheater Bypass Valve

Figure 1

IV. CAUSES OF THE EVENT

ROOT CAUSE

Misinterpretation of the intent of a procedure step by the operator performing the test procedure was caused by a personnel error. The test procedure in use at the time of the event contained a conditional step which described actions for the operator to take if desired results were not achieved in a previous step. One of those actions was unblocking that portion of the circuit which prevents end device actuation. The operator misinterpreted the intent of the step and unblocked the circuit even though all previous steps up to that point had been performed with satisfactory results. As a result, a blocking circuit in the solid state protection system was reset, enabling actuation of components during performance of a subsequent procedure step.

Facility Name (1)	Docket Number (2)	LER Number (6) Year	Sequential Number	Revision Number	Page (3)
COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	9 2	- 0 0 5	- 0 0	0 6 OF 0 7

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

CONTRIBUTING FACTORS

Contributing factor number 1: The reactor operator did not have previous experience with the test procedure in use at the time of the event. Although the test procedure had been successfully completed many times in the past by other Control Room personnel, the test had not been previously performed by the reactor operator performing the test on February 18, 1992.

Contributing factor number 2: A senior reactor operator was not sufficiently involved with the evolution to ensure adequate prebriefing and monitoring of an individual who had no previous experience performing the test.

V. CORRECTIVE ACTIONS

1. The Lessons Learned from event resolution have been reviewed by all operating crews as well as the individual directly involved to ensure a thorough and uniform understanding of the intent of the conditional procedure step,

2. All Control Room crews are being trained on slave relay test procedure implementation to promote a more thorough understanding of the process and a greater appreciation for the risks involved,

3. The reactor operator and senior reactor operator on duty at the time of the event have received personal counciling,

4. Experience gained in slave relay testing as a result of the event will be incorporated into initial and recurrent operator training, and

5. The "Voice Mail" messaging system has been used to remind Control Room supervisory personnel of the importance of increased involvement in those activities which are performed infrequently or by individuals with limited experience.

Enclosure to TXX-92102

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Facility Name (1)	Docket Number (2)	LER Number (6) Year		Sequential Number		Revision Number	Page (3)
COMANCHE PEAK - UNIT 1	0 5 0 0 0 4 4 5	9 2	-	0 0 5	-	0 0	0 7 OF 0 7

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VI. PREVIOUS SIMILAR EVENTS

Licensee Event Reports 90-007, 90-009, 90-018, 90-029, 90-037, 91-004, 91-005, 91-006, and 91-008 describe events in which personnel errors resulted in actuation of the reactor protection system or an engineered safety feature. In each case, the details of the event are sufficiently unique to conclude that the previous corrective actions could not have prevented the actuation which occurred on February 18, 1992.