TU ELECTRIC

Log # TXX-94167
File # 10200
Ref. # Voluntary

July 1, 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
REPORT OF EVENT WITH GENERIC INTEREST
LICENSEE EVENT REPORT 446/94-006-00

Gentlemen:

Enclosed is Licensee Event Report 94-006-00 for Comanche Peak Steam Electric Station Unit 2, "Undervoltage Relays Were Found to be Out Of Calibration Which Resulted in a Failure to Fully Satisfy Technical Specification Requirements."

Sincerely,

William J. Cahill Jr.

William J. Cahill, Jr.

By: Roger D. Walker

R. D. Walker
Regulatory Affairs Manager

OB:bm
Enclosure

cc: Mr. L. J. Callan, Region IV
Ms. M. A. Miller, Region IV
Resident Inspectors, CPSES

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Enclosure to TXX-94167

NRC FORM 366 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)

Facility Name (1)	Docket Number (2)	Page (3)
COMANCHE PEAK-UNIT 2	0 5 0 0 0 4 4 6	1 OF 5

Title (4)

UNDER VOLTAGE RELAYS WERE FOUND TO BE OUT OF CALIBRATION WHICH RESULTED IN A FAILURE TO FULLY SATISFY TECHNICAL SPECIFICATION REQUIREMENTS

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 Names	Docket Numbers
0 5	2 6	9 4	9 4	- 0 0 6	- 0 0	0 7	0 1	9 4	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

Operating Mode (9): 5

Power Level (10): 0 0 0

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

20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	60.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	60.36(c)(2)	50.73(a)(2)(vii)	X Other (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	Voluntary
20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

Licensee Contact For This LER (12)

Name	Area Code	Telephone Number
W.G. GULDEMOND, SYSTEMS ENGINEERING MANAGER	8 1 7	- 8 9 7 - 8 7 3 9

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)

☐ Yes (If yes, complete Expected Submission Date)

☒ No

Expected Submission Date (15): Month | Day | Year

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

On May 26, 1994, Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 5, during its midcycle outage. During the performance of Unit 2 Train B undervoltage relay calibration and response time surveillance testing, the as found calibration data appeared to be outside the Technical Specification allowables. The cause of this event was determined to be the methodology/instrumentation used to calibrate the Asea Brown Boveri relays, type ITE-27H and ITE-27N. Corrective actions were to adjust the relays, and provide additional guidance with respect to calibration. This voluntary report is being submitted due to recognition of the significance and generic interest of the event.

I. DESCRIPTION OF THE REPORTABLE EVENT

A. EVENT CLASSIFICATION

This Licensee Event Report is submitted as a voluntary report.

B. PLANT OPERATING CONDITIONS BEFORE THE EVENT

On May 23 through 28, 1994, Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 5, Cold Shutdown.

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 May 23, 1994, CPSES Unit 2 was in Mode 5, during its midcycle outage. Electrical Maintenance Technicians (utility, non-licensed) were conducting Train A undervoltage relay calibration and response time surveillance testing. Upon reviewing the as found calibration data, the technicians noted that 14 out of 16 relays were outside of their respective allowable Technical Specification values. The relay dropouts were found to be 1 to 3 volts outside expected values. The relays were adjusted to correct values. Following this discovery and correction, a comprehensive root cause evaluation was performed. It was concluded that the testing device used to calibrate the undervoltage relays did not provide accurate as-found data due to harmonic distortion, which effected peak values of the AC waveform.

During the time period of May 26, 27 and 28, 1994, TU Electric management opted to reverify both Train A and Train B relays. The purpose of their reverification was to ascertain proper setting of the relays, utilizing a clean (low harmonic) AC power supply.

On May 28, 1994, during the reverification process, it appeared that 5 of the Train A relays (type ITE-27N and ITE-27H) were outside the Technical Specification values using the most conservative data.

Following the discovery of Train A relays, which were not confirmed to be, but may have been outside of Technical Specification allowables, a voluntary report is being submitted due to recognition of the significance and generic interest of the event.

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

The Electrical Maintenance Technicians discovered the condition during the performance of routine surveillance testing.

II. COMPONENT OR SYSTEM FAILURES

A. FAILED COMPONENT INFORMATION

Not applicable - there were no component failures associated with this event.

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

Not applicable - there were no component failures associated with this event.

C. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Not applicable - there were no component failures associated with this event.

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

Not applicable - there were no component failures associated with this event.

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEMS RESPONSES THAT OCCURRED

Not applicable - there were no safety system responses associated with this event.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable - there were no safety systems rendered inoperable due to a failure.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

The safety function of the relays is to ensure that a nominal voltage is maintained at the motor loads, that motor terminal voltage is available during starting and that motors do not stall during operation. Although the miscalibration of the relays was found in Mode 5, the problem potentially existed in Modes 1 through Mode 4. A review of system grid voltage indicates that the lowest grid voltage recorded was not sufficiently low to cause actuation of the relays.

Additionally, the worst case theoretical as-found relay setting was still greater than the minimum required voltage for running or starting the motors, as required by design calculations.

It was concluded that the event did not adversely impact the safe operation of CPSES Unit 2 or the health and safety of public. This is based on the review and evaluation of the dropout voltage and historical bus voltage information after the discovery.

IV. CAUSE OF THE EVENT

TU Electric's evaluation of the plant power source and the techniques used to perform the calibration of the undervoltage relays indicated that distortion of waveform coupled with tight tolerances requirements adversely effected the calibration of this type of relay.

Additionally, review of the vendor information related to these relays did not indicate the need for a special testing considerations while performing the calibration of these items. Therefore, the calibration procedures for these relays did not reflect specific testing equipment configurations required to minimize the effects of harmonic distortion on the calibration of these relays.

V. CORRECTIVE ACTIONS

The suspect undervoltage relays were verified using a clean AC power supply.

The relays which were found to out of specification were recalibrated.

A procedure change will be implemented to require the use of clear test source, prior to performing the surveillance test for this type of relay in the future.

TU Electric is evaluating the need to revise the setpoints for the Technical Specification related undervoltage relays to allow for a greater tolerance/calibration band.

VI. PREVIOUS SIMILAR EVENTS

There have been no previous similar events attributable to the cause of this event reported pursuant to 10CFR50.73.

VII. ADDITIONAL INFORMATION

Component Information:

Vendor: Asea Brown Boveri (ABB)
Relay Type: ITE-27H and ITE-27N