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Group Vice President

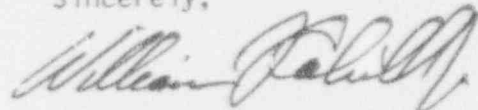
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NO. 50-445
REPORT OF EVENT WITH GENERIC INTEREST
LICENSEE EVENT REPORT 92-028-00

Gentlemen:

Enclosed is Licensee Event Report 92-028-00 for Comanche Peak Steam Electric Station Unit 1, "Termi-Point Clips Pull Tests in the Solid State Protection System".

Sincerely,



William J. Cahill, Jr.

OB/tg
Enclosure

c - Mr. J. L. Milhoan, Region IV
Mr. L. A. Yandell, Region IV
Resident Inspectors, CPSES (2)

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NRC FORM 366A		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED OMB NO. 3150-0104 EXPIRES: 4/30/92	
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.	
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Text (If more space is required, use additional NRC Form 366A's) (17)					

I. DESCRIPTION OF THE REPORTABLE EVENT**A. REPORTABLE EVENT CLASSIFICATION**

This Licensee Event Report is submitted as a voluntary report.

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On November 14, 1992, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 6, refueling outage, with the reactor head removed.

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

In March, 1988, 100% visual inspection of the Solid State Protection System (SSPS) Termini-point clip connections (EHS:(CON)(JC)) was conducted to implement the recommendations of Westinghouse Technical Bulletin WSD-TB-39-06, Section 1. 23 of the clips were found cocked (out of approximately 5000) and were subsequently replaced.

On November 14 and 15, 1992, pull tests were performed on a recommended sample of 125 clips per Train for the SSPS in response to WSD-TB-89-06, Section 2. One train experienced 6 failures in 125 clips. Pull tests were then completed on 100% of the clips in response to TB-89-06, Section 3. 62 Termini-point clips in Train A SSPS cabinet failed the pull test out of approximately 2470 points. 69 Termini-point clips in Train B SSPS cabinet failed the pull test. All of the clips that did not pass the pull test were replaced upon discovery and retested satisfactorily. Discussion with the technician and the system engineer confirmed that the wires were in contact with the circuit terminal post before pull testing.

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

Discovery was made during the pull tests conducted on the SSPS Termini-point connection.

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II. COMPONENT OR SYSTEM FAILURES

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

Cocked Termini-point clips and termi-points which slipped on the connection post when pull tested were considered failed in accordance with bulletin WSD-TB-89-06. The pull test applies 2.25 pounds of force to the clip as an acceptance criteria.

The pull test force applied is much larger than the forces expected during plant operation, including forces and physical movement predicted during seismic events.

B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

The cause of the clip test failures was attributed to the random manufacturing installation error, as denoted in WSD-TB-89-06.

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

Not applicable - no failures of components with multiple functions have been identified.

D. FAILED COMPONENT INFORMATION

Termini-point clips in the Westinghouse provided SSPS Manufacturer: Amp Incorporated.

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

Not applicable - The testing was performed while the system was out of service and the core was unloaded. There were no safety system actuations associated with this event.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable - Upon completion of the testing and rework, both trains passed the required surveillance testing and were therefore operable when SSPS was returned to service.

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C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

The Solid State Logic Protection System takes binary inputs (voltage/no voltage) from the process and nuclear instrument channels corresponding to conditions (normal/abnormal) of plant parameters. The SSPS combines these signals in the required logic combination and generates a trip signal (no voltage) to the undervoltage coils of the reactor trip circuit breakers. The system also provides safeguard equipment actuation and annunciator, status light (EHS:(BKR)(AA)) and computer input signals. The protection system is designed to provide two, three, or four instrument channels for each protective function and two logic train circuits. Loss of input power to a channel or logic train will result in a signal calling for a reactor trip. Any single failure within a channel or train will not prevent protective action.

The clips at CPSES were installed per the recommended procedure with the proper tools. Additionally, a 100% visual inspection was performed prior to initial core load to verify that the clips were correctly crimped onto the post. Thus, the clips were securely installed to the post.

The historical results of surveillance testing shows that SSPS was operable before pull testing. The surveillance testing demonstrated that the system would initiate any required Engineering Safety Function actuation or Reactor Trip as designed. This is further substantiated by visual inspections that confirmed that the wires were in contact with the circuit terminal post before pull testing. Thus, SSPS was operable prior to pull testing.

The pull testing of both trains was performed while the core was unloaded. SSPS was not required to be operational during this time.

The pull test is an extremely conservative test recommended by the Westinghouse bulletin that is not an accurate representation of the forces that would be experienced during a seismic event. Engineering has evaluated forces predicted on the term-point clips during a seismic event and determined that seismic effects are sufficiently small to be significantly below the pull test forces and would not have caused an operability problem. After testing and rework was completed, SSPS was restored to an operable status before returning to service.

Therefore, the pull test failures are not a seismic concern and did not affect system operability.

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IV. CAUSE OF THE EVENT**ROOT CAUSE**

The clips depend on friction between the clip and terminal post to maintain electrical wiring continuity. Westinghouse Technical Bulletin WSD-TB-89-06 identified the cause as a potential installation problem, presumably when the cabinets were built or as a result of subsequent design modification. Pull Testing of Termi-point clips is a conservative quality control check to verify the strength of clip attachment.

V. CORRECTIVE ACTIONS**A. ROOT CAUSE**

Full visual inspection and a complete pull-test of the Termi-point clips for each train of the SSPS cabinets has been completed. Procedures were revised to require pull testing after any future design modifications.

B. CORRECTIVE ACTION TAKEN ON GENERIC CONCERNS IDENTIFIED AS A DIRECT RESULT OF THE EVENT**GENERIC CONCERN**

Termi-point clips are also installed in the CPSES Unit 2 SSPS. Also, Termi-point clips are used for the Control Board/Computer De-multiplexer (EIS:(MUX)(AA)), Rod Control (EIS:(AA)) and Digital Rod Position Indication (DRPI) systems (EIS:(ZI)(AA)).

CORRECTIVE ACTION

In June, 1992, CPSES Unit 2 completed a pull test on 184 Termi-point clips on each train of the SSPS, in accordance with WSD-TB-89-06, Section 2. No deficiencies were noted.

Prior to low power licensing in January, 1993, CPSES Unit 2 completed a 100% pull test of the Termi-point clips of the SSPS, in accordance with WSD-TB-89-06, section 3. 87 clips failed in Train A and 40 clips failed in Train B. The failed Termi-points were replaced. A visual inspection was satisfactorily performed on CPSES Unit 2 Termi-point clips for the Digital Rod Position Indication (DRPI) system. CPSES Unit 1 will perform a visual inspection of the DRPI Termi-point clips during a future outage.

