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Ref. # 10CFR50.55(e)

January 5, 1988

William G. Council  
Executive Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NOS. 50-445 AND 50-446  
UNQUALIFIED TERMINAL BLOCKS  
SDAR: CP-87-139 (INTERIM REPORT)

Gentlemen:

On December 30, 1987 we verbally notified you of a deficiency involving equipment qualification of terminal blocks inside and outside of containment. After further evaluation we have determined that this deficiency is reportable under the provisions of 10CFR50.55(e). The required information follows.

#### Description

The environmental qualification acceptance criteria for Weidmuller SAK terminal blocks, as developed by the manufacturer, were based on insulation resistance and leakage current. Insulation resistance was measured by megger and by the ability of the terminal block to maintain voltage phase-to-phase and phase-to-ground during Loss of Coolant Accident (LOCA) tests. Leakage currents were monitored during the tests by a fuse in the test circuit which blew when the leakage current reached the level of the fuse rating (typically 1 amp). These tests were not capable of quantifying leakage levels in the milliamp range, which could be significant in low voltage instrument applications under post-LOCA environments.

Lacking this specific test data, we have reviewed test results and information on terminal blocks from manufacturers, independent laboratories and the NRC which was issued for the CPSES project and the industry. As a result of this review, we have established an unacceptably high probability that Weidmuller terminal blocks may not perform properly in instrument applications under post-LOCA and high energy line break (HELB) conditions. We have conservatively committed to remove all Weidmuller terminal blocks (instrumentation, control and power) in the containment building and HELB areas.

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The cause of this deficiency is a failure on the part of the design organization to consider low level terminal block leakage current in instrumentation circuits. This deficiency is generic to all instrumentation inside containment and high energy line break areas which employ Weidmuller terminal blocks.

Safety Significance

Acceptance criteria for terminal block usage in instrument circuits is based on allowable leakage currents. Since many instruments use low level current signals, leakage current can have a direct effect on instrument readings. Review of industry data on leakage current effects in instrumentation circuits indicates that leakage currents up to 10 MA may occur. Leakage currents as low as 10 MA significantly alter instrumentation indications.

This represents a significant deficiency in the final design as approved and released for construction, which were it to have remained uncorrected could have adversely affected the safety of plant operations, and is therefore reportable under the provisions of 10CFR50.55(e).

Corrective Action

Applicable Weidmuller terminal blocks will be replaced. Design procedures have been developed which assure the design basis criteria is implemented.

Our next report will be issued no later than April 15, 1988 to provide a schedule for completion of the specified corrective actions.

Very truly yours,

*W.G. Council*

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By: *D.R. Woodlan*

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