TU ELECTRIC

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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
CRACKED TURNING VANES IN HVAC SYSTEMS
SDAR: CP-89-014 (FINAL REPORT)

Gentlemen:

On May 5, 1989, TU Electric verbally notified the NRC of a deficiency involving cracked welds in turning vanes in HVAC system elbows. The last report on this issue was logged TXX-89354 dated June 5, 1989. After further evaluation it has been concluded that this deficiency does not meet the criteria for reportability under the provisions of 10CFR50.55(e) or 10CFR21.

Engineering reviews and evaluations have established that turning vane weld deficiencies (deficiencies in construction) would not have resulted in vane failures under normal flow induced loads or, with the exception of two cases, in vane failures due to seismic loading. The two exceptions involved elbows with vanes 96 inches in length which were not analyzed pursuant to this SDAR and were instead assumed to fail during a seismic event. Engineering reviews based on this assumption concluded that the corresponding HVAC system would perform its safety related function. As a result, the construction deficiencies associated with this issue do not meet the criteria for reportability pursuant to 10CFR50.55(e).

In addition to the construction related deficiencies associated with the quality of turning vane welding, a design issue was identified involving the use of long vanes without intermediate support. This deficiency introduced the potential for a random failure mechanism due to flutter induced fatigue of longer vanes with unsupported spans. An engineering review established that duct work geometry or internal configuration would preclude the entry of a failed vane into a safety related fan. Therefore, no single vane failure could prevent performance of the safety function of the associated HVAC train. In addition, reasonable confidence was established that vane failures by this mechanism would not have continued undetected for sufficient time that overall system performance would be unacceptably degraded (decreased efficiency from increased pressure losses) nor result in a significant overall reduction in the level of fire protection due to the potential for a fouled

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fire damper. Vendor design relative to support of these vanes was in accordance with the industry standard referenced by the applicable specification. This standard did not address the need for additional support of long vanes. However, a subsequent revision to the standard added this requirement, and vane stiffeners have been added where appropriate.

Records documenting walkdown results, assumptions and methodology utilized in the engineering review and evaluation of this issue are available for NRC review.

Sincerely,

William J. Cahill, Jr.

MCP/vld

c - Mr. R. D. Martin, Region IV
Resident Inspectors, CPSES (3)