TU ELECTRIC

Log # TXX-88013
File # 10110
909.4
Ref. # 10CFR50.55(e)

January 29, 1988

William G. Counsil
Executive Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION
DOCKET NOS. 50-445 AND 50-446
CONTROL ROOM AIR CONDITIONING AND PRIMARY PLANT
VENTILATION SYSTEMS
SDAR: CP-87-135 (FINAL REPORT)

Gentlemen:

On December 18, 1987, we verbally notified your Mr. R. F. Warnick of a deficiency involving potential failure of relays and switches in control room air conditioning and primary plant ventilation systems. After further evaluation, we have conservatively concluded that this issue is reportable under the provisions of 10CFR50.55(e). The required information follows.

DESCRIPTION

Safety-related control circuits of redundant trains of the control room air conditioning system were not designed to meet the single failure criterion. The function of these circuits is to initiate a signal which will terminate the operation of the operating make-up supply fan and start the ESF filtration units following a LOCA. The consequences of a single failure would be loss of start signal for the ESF filtration unit, which is acceptable due to redundancy in the system design, and the loss of supply fan termination signal, which is not acceptable because it would allow the make-up supply fan to continue its operation and thus exceed the control room habitability dose limits due to introduction of unfiltered outside air into the control room.

The primary plant ventilation system supply fans are powered from non-safety related starters and automatically tripped by non-safety related pressure switches. During a LOCA, if offsite power is not lost and the automatic trips do not function, a negative pressure in the auxiliary, safeguards, and fuel buildings may not be maintained. This may result in unfiltered leakage after commencing the recirculation mode of Emergency Core Cooling System (ECCS) operation unless the fans are manually secured.

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This deficiency was identified during a review of operating procedures for the control room HVAC system and primary plant ventilation system. Single failure criterion was not properly applied to the design of the systems, nor all safety functions accomplished by the application of safety related equipment or operator action. Other safety related HVAC systems have been assessed for similar deficiencies in the Design Validation Program and have been found acceptable.

SAFETY IMPLICATIONS

The control room air conditioning system deficiency, if uncorrected, could allow unfiltered outside air to be introduced into the control room in the emergency recirculation mode of operation. This could have challenged the capability to limit the radiation dose received by control room operators during accident conditions to within FSAR commitments.

The primary plant ventilation system deficiency, if uncorrected, could cause the post-LOCA offsite dose to increase from the dose levels specified in the FSAR.

CORRECTIVE ACTION

A design change for the control room air conditioning system deficiency has been initiated in accordance with the design criteria as specified in the Design Basis Document (DBD-EE-054, Control Circuits Parameters/Loading Requirements) to bring the circuit design in compliance with the single failure criterion.

The design criteria for instrumentation and control circuit designs to accomplish a safety function (DBD-EE-054, Control Circuit Parameters/Loading Requirements) combined with the design criteria for the functional requirements of the primary plant ventilation system (DBD-ME-309, Primary Plant Ventilation System) and design criteria for classification of structures, systems and components (DBD-ME-028, Classification of Structures, Systems and Components) assure proper instrumentation and control system design. Operator action (within the bounds described in the FSAR) is an acceptable alternative in lieu of implementing some of the design criteria specified above.

Based on 30 minutes operator action outside of the control room, and a calculation assuming continued operation of the primary plant ventilation system supply fans following a LOCA, station emergency operating procedures are being revised to incorporate the requirement that the control room operation dispatch personnel to manually disconnect power supply to the supply fans.

Very truly yours,

W. G. Counsil

By: John W. Beck
John W. Beck
Vice President,
Nuclear Engineering

JDS/grr

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