TU ELECTRIC

Log # TXX-88116
File # 10110
906.5
Ref. # 10CFR50.55(e)

William G. Counsil
Executive Vice President

January 19, 1988

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
CONTAINMENT SPRAY CHEMICAL ADDITIVE SYSTEM
SDAR: CP-88-16 (FINAL REPORT)

Gentlemen:

On January 15, 1988, we verbally notified your Mr. R. F. Warnick of a potentially reportable deficiency involving the Containment Spray System chemical additive tank and associated piping which has been identified as being designed and fabricated from material that does not provide the specified design life. We have concluded that this issue is reportable under the provisions of 10CFR50.55(e). The required information follows.

DESCRIPTION

The Containment Spray System chemical additive tank, piping and valves have been designed and fabricated from ASTM TP-304 stainless steel. The wall thickness of the chemical additive tank is .250 inch for the shell and .320 inch for the head of the tank. The wall thickness for 3/4 inch, 2 inch and 3 inch diameter schedule 40 TP-304 piping is .113 inch, .154 inch and .216 inch, respectively. The chemical additive tank contains a 30% sodium hydroxide solution (NaOH). The ambient temperature in the chemical additive tank room is 104 degrees F during normal conditions and 122 degrees F during emergency conditions. Based on National Association of Corrosion Engineers (NACE) publication "Corrosion Data Survey", 5th Edition 1974, a corrosion rate of approximately .020 inch/year may be developed which would provide a life expectancy of about 10 years maximum for the tank. The life expectancy of the piping exposed to the NaOH solution is shorter than that of the tank because of the thinner minimum wall and higher stress requirements.

The cause of this deficiency is a failure of the design organization to properly consider the corrosion rate of ASTM TP-304 stainless steel when exposed to a highly caustic solution. The chemical additive system is the only safety system exposed to these service conditions. Materials of the Containment Spray System components which are normally exposed to less concentrated caustic fluid have been reviewed and no other discrepancies were found.

IE27
1/0

SAFETY IMPLICATIONS

Undetected thinning of this tank and piping over the life of the plant could have resulted in tank or pipe failure. Had this occurred during a LOCA, insufficient NaOH may have been added to containment spray water.

Although failure of this system during a LOCA is unlikely, it is the conservative basis for concluding the issue is reportable under 10CFR50.55(e).

CORRECTIVE ACTION

An inservice inspection program will be developed to monitor tank/piping corrosion rates by periodically measuring component wall thicknesses and reviewing the results against minimum wall and stress requirements.

The appropriate materials criteria for the Containment Spray System chemical additive piping and components have been specified in the Containment Spray System Design Basis Document (DBD-ME-232). Future system modifications and pipe/component replacement will utilize the DBD criteria to ensure material compatibility.

Development of the inspection program will be completed by November 15, 1988. The program will remain in effect until an actual in service corrosion rate can be determined and acceptable tank life confirmed, or required replacement date established.

Very truly yours,

W. G. Counsil

W. G. Counsil

By: D. R. Woodlan

D. R. Woodlan
Supervisor,
Docket Licensing

BSD/grr

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