April 24, 2000

Mr. S. K. Gambhir
Division Manager - Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
Post Office Box 399
Hwy. 75 - North of Fort Calhoun
Fort Calhoun, NE 68023-0399

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 - COMPLETION OF LICENSING ACTIVITY FOR GENERIC LETTER (GL) 96-06, "ASSURANCE OF EQUIPMENT OPERABILITY AND CONTAINMENT INTEGRITY DURING DESIGN-BASIS ACCIDENTS," DATED SEPTEMBER 30, 1996 (TAC NO. M96813)

Dear Mr. Gambhir:

The NRC staff issued GL 96-06 on September 30, 1996, to all holders of operating licenses for nuclear power reactors, except for those licenses that have been amended to possession-only status. GL 96-06 requested information from licensees related to two concerns: (1) water hammer and two-phase flow in the cooling water systems that serve the containment air coolers, and (2) thermally induced overpressurization of isolated water-filled piping sections in containment. On November 13, 1997, the staff issued Supplement 1 to GL 96-06, informing licensees about ongoing efforts and new developments associated with GL 96-06 and providing additional guidance for completing corrective actions. You responded in letters dated January 24, 1997, October 21, 1998, and June 22, 1999. The results of the NRC staff's review of your responses to GL 96-06 follow.

Water Hammer and Two-Phase Flow

You provided your assessment of the water hammer and two-phase flow issues for the Fort Calhoun Station (FCS) in a letter dated January 24, 1997. Additional information was submitted by letters dated July 24 and October 21, 1998. Based on our review of the information provided, we understand that you have increased the minimum required component cooling water system surge tank pressure to eliminate the potential for steam formation during the event scenario, and that no water hammer or two-phase flow conditions were identified. You also indicated that annunciation is available in the control room to alert operators of low surge tank pressure and level conditions. We are satisfied with your response and consider the water hammer and two-phase flow elements of GL 96-06 to be closed.

However, our review did not include an evaluation of specific design details associated with the surge tank modification or findings relative to 10 CFR 50.59 requirements, and we trust that you have adequately addressed these issues.

Thermally Induced Overpressurization

Your submittal dated January 24, 1997, stated that you performed an evaluation of mechanical containment penetrations which were potentially vulnerable to an increase in pressure due to heating of trapped fluid. Further, you determined that the integrity of the penetrations would be maintained following a design-basis accident condition. In the October 21, 1998, submittal, you stated that the penetrations comply with the Updated Safety Analysis Report (USAR) criteria. In your June 22, 1999, submittal, you specifically identified the 66 piping penetrations which were potentially susceptible to thermally-induced pressurization. However, you determined that for 38 of these penetrations, there is no pressurization possible since the piping segments either do not contain liquid, are open such that liquid is not trapped, or contain fluid which is initially hotter than the maximum containment accident temperature. You also determined that for 21 penetrations, pressure would be adequately relieved by relief valves or check valves. For five penetrations, you determined that thermally-induced pressurization would be relieved to acceptable values by lifting of the isolation valve disks against the actuator forces. For the remaining two penetrations, you conservatively calculated the peak thermally-induced pressures for limiting accident conditions and determined that they were within acceptable limits. As a result, you concluded that all of the above penetrations meet the current licensing basis in accordance with the Ft. Calhoun Station USAR.

The staff finds that your responses provide an acceptable resolution for the issue of thermally-induced pressurization of piping segments penetrating the containment.

Overall the staff concludes that all requested information has been provided; therefore, we consider GL 96-06 to be closed for the Fort Calhoun Station.

Sincerely,

/RA/

L. Raynard Wharton, Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-285

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Sincerely,
/***RA/***
L. Raynard Wharton, Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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