



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 7, 2000

Template = NRR - 056

File Center

Mr. C. Randy Hutchinson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 AND 2 - COMPLETION OF LICENSING ACTION FOR GENERIC LETTER 96-06, "ASSURANCE OF EQUIPMENT OPERABILITY AND CONTAINMENT INTEGRITY DURING DESIGN-BASIS ACCIDENTS," (TAC NOS. M96775 AND M96776)

Dear Mr. Hutchinson:

The Nuclear Regulatory Commission (NRC) staff issued Generic Letter (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 28, 1997 (OCAN019702), July 31, 1997 (OCAN079710), December 18, 1997 (OCAN129703), and January 25, 1999 (OCAN019903). The results of the NRC's review of your responses to GL 96-06 follow.

Water Hammer and Two-Phase Flow

You provided an assessment of the water hammer and two-phase flow issues for Arkansas Nuclear One, Units 1 and 2 (ANO-1, ANO-2) in your letter dated January 28, 1997, as supplemented by letter dated January 25, 1999. The NRC staff, with the support of Sciencetech, Inc., has completed its review of your submittals. The staff adopts the conclusions presented in Sciencetech's Letter Report No. 240-2, provided as an enclosure to this letter. Except for a couple of minor errors discussed on page 8 of the enclosed letter report, the staff accepts your analysis of the water hammer and two-phase flow issues identified in GL 96-06. Therefore, the staff concludes that the issue of water hammer and two-phase flow in the cooling water systems that supply the safety-related containment air cooling fan units at ANO-1 and ANO-2 is closed.

Thermally Induced Overpressurization

In your submittal dated January 28, 1997, you identified 21 penetrations in the ANO-1 containment, and 11 penetrations in the ANO-2 containment, as potentially vulnerable to a water-solid volume that may be subjected to an increase in pressure due to heating of trapped fluid. You determined that all affected penetrations were operable based on piping plastic deformation and potential leakage through valve/packing seating surfaces.

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In your submittal dated July 31, 1997, you determined that one penetration each in ANO-1 and ANO-2, is drained and will be maintained in a drained configuration during normal operation, and two of the penetrations in ANO-1 are out of service and are currently blanked-off. You committed to inspect the two blanked-off penetrations during your March 1998, refueling outage to ensure that they are drained.

In response to the staff's request for additional information dated April 14, 1998, you submitted a letter dated January 25, 1999. In this submittal, you committed to install pressure relief valves on the remaining 18 susceptible penetrations in ANO-1 during the refueling outage completed in the fall of 1999, and on the 10 remaining susceptible penetrations in ANO-2 during the refueling outage planned for September 2000.

The staff finds that your corrective actions provide an acceptable resolution for the issue of thermally-induced pressurization of piping runs penetrating the containment. In addition, the staff concludes that all requested information has been provided; therefore, we consider GL 96-06 to be closed for your facility.

Sincerely,

/RA/

M. Christopher Nolan, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-313 and 368

Enclosure: As stated

cc w/encl: See next page

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