



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

OCT 17 1994

CDR-50-390

10 CFR 50.55(e)

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

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390

WATTS BAR NUCLEAR PLANT (WBN) - RESIDUAL HEAT REMOVAL SYSTEM MINIFLOW
CHECK VALVES IN IMPROPER ORIENTATION - CDR-50-390/94-11

The purpose of this letter is to provide a report in accordance with 10 CFR 50.55(e). The subject deficiency, documented in Significant Corrective Action Report WBSA940046, was initially reported to the NRC Operations Center on September 16, 1994. The enclosure to this letter contains TVA's final report on this subject.

If you have any questions, please telephone P. L. Pace at (615) 365-1824.

Sincerely,

Dwight E. Nunn
Vice President
New Plant Completion
Watts Bar Nuclear Plant

Enclosure
cc: See page 2

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cc (Enclosure):

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT - UNIT 1
RESIDUAL HEAT REMOVAL MINIFLOW CHECK VALVES
CDR 50-390/94-11
FINAL REPORT

DESCRIPTION OF DEFICIENCY

On July 15, 1994, during valve disassembly, WBN identified that the Residual Heat Removal (RHR) system check valves were in the fully open position and would not have closed to inhibit reverse flow, as required. These valves are Anchor Darling, 8 inch, tilting disk check valves and are located in a vertical pipe run of the main lines, downstream of the RHR system miniflow lines.

WBN purchase specifications identified that the valves would be used in a vertical pipe run and Anchor Darling vendor drawings identified that the supplied valves were acceptable for this application. However, Anchor Darling did not perform the required internal valve modification which would allow the valve to operate in a vertical orientation.

SAFETY IMPLICATIONS

The residual heat removal (RHR) system at WBN is a safety-related system designed to ensure adequate heat removal during shutdown conditions (Modes 4, 5 and 6) and following a loss of coolant accident (LOCA) such that the acceptable fuel design limits are not exceeded. Following a large break LOCA, the RHR system provides low head flow, from the refueling water storage tank (RWST), to the reactor coolant system (RCS) during the injection mode of cooling. During the recirculation mode of cooling following a large break LOCA, the RHR system provides the capability to pump water from the containment sump to the RCS.

In the event of a small break LOCA, the RHR system remains available to provide cooling should the RCS pressure drop below the setpoint for initiation of the RHR system. In the event of RHR system actuation following a small break LOCA, the RHR pump discharge will be at a lower pressures than the RCS, resulting in the check valve being closed and a portion of the pump discharge flowing through the miniflow lines. However, the failure of the check valves could result in the stronger RHR pump deadheading the weaker RHR pump with the potential for the subsequent failure of the weaker pump. Taking into account an additional single failure, as required by 10 CFR 50.55e, this deficiency could result in a loss of RHR capability at WBN.

CAUSE OF THE DEFICIENCY

This deficiency was a result of a failure of the vendor (Anchor Darling) to ensure materials supplied to WBN met the required purchase specifications.

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT - UNIT 1
RESIDUAL HEAT REMOVAL MINIFLOW CHECK VALVES
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FINAL REPORT

CORRECTIVE ACTIONS

The following corrective actions have been taken to address the subject deficiency:

1. The field work for the internal valve modification required to ensure the RHR check valves will operate in a vertical configuration has been completed.
2. TVA has reviewed the remaining active swing and tilting disc check valves to determine if they were procured to be installed in vertical pipe runs. This review indicated no additional active check valves were specified for vertical installations. Therefore, no other deficiencies were identified.
3. TVA contacted a representative of Anchor Darling on September 29, 1994 to inform the vendor of this deficiency.