Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

JUL 15 1991

WBRD-50-390/91-16
WBRD-50-391/91-16

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) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - CONTAINMENT PRESSURE TRANSMITTER ISOLATION BELLOWS QUALIFICATION - WBRD-50-390/91-16 AND WBRD-50-391/91-16 - FINAL REPORT

The subject deficiency was initially reported as potentially reportable to NRC Region II on March 29, 1991, in accordance with 10 CFR 50.55(e) as Problem Evaluation Reports (PERs) WBPER 910142 and WBPER 910145. These PERs have been upgraded to Significant Corrective Action Report WBSCA 910201.

TVA submitted an interim report to NRC on April 29, 1991. Subsequently, TVA determined the subject deficiency to be not reportable. Enclosure 1 is TVA's final report on this subject.

The commitment made in this report is provided in Enclosure 2.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark J. Burzynski for

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Enclosures
cc: See page 2

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN)
CONTAINMENT PRESSURE TRANSMITTER ISOLATION BELLOWS QUALIFICATION
SIGNIFICANT CORRECTIVE ACTION REPORT (SCAR) WBSCA 910201
WBRD-50-390/91-16 AND WBRD-50-391/91-16

FINAL REPORT

DESCRIPTION OF DEFICIENCY

TVA has determined that vendor qualification testing supplied for the containment pressure transmitters does not support statements made in Section 6.2.4 of the WBN Final Safety Analysis Report (FSAR). Specifically, containment monitoring transmitters that do not use inline automatic containment isolation valves are stated to meet a qualification requirement for redundant barriers to prevent communication between the primary and secondary containment atmospheres.

The containment pressure transmitters are required for actuation of Engineered Safety Feature Systems and for containment pressure monitoring. Standard construction of the containment pressure transmitters uses double impermeable bellows to measure the differential pressure between primary and secondary containment. However, the existing qualification testing supplied by the vendor does not specifically demonstrate each bellows' capability to individually maintain pressure integrity when subjected to design pressure conditions. This apparent qualification deficiency is based on a postulated random failure of the inboard bellows coincident with a containment isolation design basis event (DBE) which would cause the outboard bellows to represent the only containment isolation barrier. The associated instruments are as follows:

- Unit 1 Pdt-30-42, -43, -44, -45 and -30C
  Pt-30-310 and -311

- Unit 2 Pdt-30-42, -43, -44, -45, -30C and -133
  Pt-30-310 and -311

SAFETY IMPLICATIONS

The containment pressure transmitters perform safety functions related to safety injection signal initiation, Phase B containment isolation signal initiation, post accident monitoring, and normal operating containment pressure monitoring. The subject deficiency will not impact these safety functions. A random single failure of one transmitter will not adversely affect proper operation of the redundant transmitter(s).

TVA has performed a technical evaluation to determine if design basis requirements are adequate to ensure the subject containment pressure monitoring transmitters and associated sense lines will maintain proper containment integrity. The technical evaluation concluded that the design basis document, Design Criteria WB-DC-40-34, "Containment Isolation Systems," specified adequate design requirements for containment pressure monitoring systems. These requirements include:

- Seismic Category I designation for the entire system.
- ASME Section III Class 2 designation for the sense line from the containment nozzle connection to and including the instrument isolation valve.
- Protection from effects of missiles, pipe whip, and jet impingement for the entire system.
- Automatic isolation valves are not required primarily due to increased instrument unavailability caused by an inadvertent valve closure.
- Environmental qualification to maintain containment integrity to withstand DBE environmental conditions.

Additionally, the containment pressure monitoring systems, which include pipe/tubing, fittings, flexible metallic hose, inline manual valves, and the transmitter body (including the bellows), are considered passive components. Passive components are defined in Design Criteria WB-DC-40-34 as those components in which mechanical motion does not occur in order for the component to complete its intended function. The above components provide a continuous pressure boundary retention function and do not rely on mechanical motion.

Double barrier containment isolation requirements are normally used to ensure pressure boundary integrity of open lines. The containment pressure transmitters represent a closed line at all times. The bellows do not present an active barrier. Therefore, no additional tests are required to demonstrate that each of the two containment pressure transmitter bellows are independently qualified. The qualification of the containment pressure transmitter body as a single unit meets the design basis requirements. The FSAR statements concerning containment pressure transmitter inner and outer bellows qualification are excessively restrictive and beyond design basis requirements. No hardware deficiency exists. If left uncorrected, the subject deficiency could not have adversely affected the safety of plant operations.

CORRECTIVE ACTIONS

FSAR Section 6.2.4.1 and Table 6.2.4-4 will be amended to reflect the design basis requirements for containment pressure monitoring instrument systems. Also, Design Criteria WB-DC-40-34 and system Q-List drawings (92QL30-Series) will be revised to provide clarification related to the containment pressure transmitter boundary qualification requirements. These actions will be completed by February 21, 1992.

ENCLOSURE 2

LIST OF COMMITMENTS

Final Safety Analysis Report (FSAR) Section 6.2.4.1 and Table 6.2.4-4 will be amended to reflect the design basis requirements for containment pressure monitoring instrument systems. Also, Design Criteria WB-DC-40-34 and system Q-List drawings (92QL30-Series) will be revised to provide clarification related to the containment pressure transmitter boundary qualification requirements. These actions will be completed by February 21, 1992.