

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

MAR 16 1987

WBRD-50-390/83-70
WBRD-50-391/83-65

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Mr. Stewart Ebnetter

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

Docket Nos. 50-390
50-391

**WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - CONTROL ROOM PRESSURIZATION BOUNDARY
LOSS THROUGH FLOOR AND EQUIPMENT DRAINS - WBRD-50-390/83-70, WBRD-50-391/83-65
- SECOND REVISED FINAL REPORT**

The subject deficiency was initially reported to NRC-Region II Inspector P. E. Fredrickson on November 21, 1983, in accordance with 10 CFR 50.55(e) as NCR WBN WBP 8335. Our final report and revised final report were submitted on April 6, 1984, and March 20, 1985, respectively. Enclosed is our second revised final report

If there are any questions, please call R. D. Schulz at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Doman
for R. Gridley, Director
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Enclosure

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U.S. Nuclear Regulatory Commission

MAR 16 1987

cc (Enclosure):

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
CONTROL ROOM PRESSURIZATION BOUNDARY LOSS THROUGH FLOOR AND EQUIPMENT DRAINS
WBRD-50-390/83-70, WBRD-50-391/83-65
NCR WBN WBP 8335
10 CFR 50.55(e)
SECOND REVISED FINAL REPORT

DESCRIPTION OF DEFICIENCY

Floor and equipment drains, as well as potable water lines, which penetrate the floor slab of the main control room (MCR) (El. 755) were designed without considering the need to prevent loss of the main control room habitability system (MCRHS) pressure boundary. As such, a method to ensure that pipe traps maintain enough water to seal off the leak paths between the MCRHS and other areas during control room isolation was not provided, nor were the pipes supported to maintain their pressure boundary in a seismic event.

This deficiency was discovered while implementing the corrective action for a previous nonconformance report (NCR) WBN QAB 8204 (WBRD No. 50-390/82-71, 391/82-66). The deficiency was caused by insufficient procedural controls to ensure identification of all piping requiring seismic supports and to ensure that identified piping would be analyzed and supported.

SAFETY IMPLICATIONS

The MCR is designed for minimum air leakage in the event of a MCR isolation so that the MCRHS can maintain a slightly positive air pressure within the room. This positive pressure prevents the entrance of airborne contaminants which could exist outside the MCR. The loss of drain lines or water seals in the traps could allow sufficient leakage to eliminate the room's positive pressure and allow the entrance of contaminants. This could force an evacuation of the MCR. While the plant could then be safely shutdown from the auxiliary control room, TVA considers this potential loss of the MCR an unnecessary challenge to the plant's safety systems.

CORRECTIVE ACTION

TVA has instituted design changes through engineering change notice (ECN) 4451 to cover all piping penetrating the MCR boundary such that:

1. Floor and equipment drain lines have been redesigned and seismic supports provided to maintain both the MCRHS pressure boundary and water seals in the traps. These traps were removed from the MCR floor slab, and additional traps were designed in certain areas where it was determined necessary to guard against the effects of a postulated main steam line break (MSLB). The drains were then provided with seismic supports from the floor penetrations to a point just downstream of the traps where pipe anchors were provided to terminate the seismic analysis. A direct connection to the potable water system was also designed to provide a continuous drip supply of water to the trap seals. All design and construction work for these modifications has been completed.

2. Potable water system piping in the control room has been redesigned to include two check valves in the two-inch potable water supply line and a manually operated butterfly valve in the four-inch vent pipe at a location just below the ceiling slab at El. 777.0' to provide isolation capability. Seismic supports to ensure pressure boundary integrity were then provided for the two-inch potable water supply line from the floor penetrations to the upstream check valve (including the second check valve), and for the four-inch vent pipe from the ceiling slab to the butterfly valve. All design and construction work for these modifications has been completed.
3. The four-inch waste drain piping will be sealed by operator action after determination of line breakage during a safe shutdown earthquake (SSE). This will be accomplished by removing the porcelain fixtures and sealing the drain pipe openings with duct tape. These instructions have been incorporated into the plant Abnormal Operating Instruction, AOI-9.0.

Our last report committed to installing two motor-operated ball valves in the drain piping downstream of the last tributary branch line. Ball valves are no longer planned to be installed. Actions specified in the AOI provide an adequate permanent corrective action for maintaining MCRHS integrity after a safe shutdown earthquake. This is a revision to the previous report.

Watts Bar Engineering Project (WBEP) Engineering Procedure (EP) 43.24, "Piping Analysis Techniques - Selection," was issued on January 9, 1986, as part of the corrective action for NCR WBN SWP 8265 (WBRD-50-390,391/83-05). While generally providing guidance to the piping designer in identifying the proper seismic analysis requirements for all piping in seismic Category 1 structures, WBEP-EP 43.24 specifically identifies that piping which penetrates the MCRH zone requires seismic analysis. TVA considers the issuance of WBEP-EP 43.24 and subsequent training of appropriate personnel adequate to prevent recurrence of the subject deficiency. This training is administered and maintained as required by NEP-1.2, "Training."