



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

JUL 11 1991

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 - NUREG-0737, ITEM II.D.1 -
SAFETY AND RELIEF VALVE TESTING (TAC NO. 79992)

This provides TVA's response as requested by your letter dated March 21, 1991, and subsequent teleconference between TVA and NRC on April 2, 1991. The extended due date for this response was coordinated with the NRC WBN Project Manager, Peter Tam.

During the teleconference, NRC requested TVA to update the response provided on July 22, 1983. In addition, TVA was asked to review the Sequoyah Nuclear Plant responses to the subject item for applicability to WBN. Enclosure 1 provides the updated response.

Enclosure 2 provides a list of new commitments that are identified in this letter. If there are any questions, please telephone M. C. Bryan at (615) 365-8819.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

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Enclosures
cc: See page 2

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN) NUREG-0737, ITEM II.D.1 SAFETY AND RELIEF VALVE TESTING

The following updates TVA's final response dated July 22, 1983, to the subject NUREG item for WBN. As requested, the Sequoyah Nuclear Plant responses to this item were reviewed and considered, where appropriate. The major differences from the previous WBN response are described in Item 2.0.

1.0 BLOCK, SAFETY, AND RELIEF VALVE PERFORMANCE

The July 22, 1983 response remains unchanged. TVA modified the safety loop seal piping to be self-draining and removed the power operated relief valve (PORV) loop seals. These modifications were made to eliminate the discharge of a high density slug of subcooled water through the piping. The PORVs were also changed to Target Rock solenoid operated type valves. The safety valves were modified to change the water trim internals to steam trim internals. The motor operated block valves were changed from torque control closure to limit control closure using the stem nut deflection preload method to ensure complete valve closure. Those modifications have been completed on Unit 1. For Unit 2, previously committed modifications will be completed or verified as being complete before system turnover to Operations.

2.0 SUMMARY OF PIPING/SUPPORT EVALUATION

As part of the corrective action for the Hanger Analysis Update Program (HAAUP), the piping support analyses were reviewed to the updated WBN design criteria, and calculations were performed utilizing the latest available techniques as described below.

Reanalysis of the pressurizer relief piping was performed for the following transients: (1) Safety relief valve opening/closing, (2) PORV opening/closing, and (3) PORV opening/closing during the cold overpressure mitigation system mode of operation.

The fluid transients for the Unit 1 pressurizer safety and relief valve piping were regenerated to determine the forcing functions due to the actuation of the pressure relief valves and safety valves. Those forcing functions were generated by using the WATHAM and STEHAM computer programs and were subsequently provided as input data to the associated system pipe stress analysis for the HAAUP program. The fluid transient analysis of record is TVA calculation WBNAPS2-035. This analysis replaces the loads originally generated using the RELAP4/MOD5 program. Transient loadings on the piping were evaluated to the guidelines established in the updated WBN design criteria. Dynamic transients (time history) were evaluated by TPIPE using the direct integration analysis method. Support loads generated by the TPIPE program were evaluated, and design change notices have been issued for support modifications to Unit 1. These modifications will be completed before Unit 1 hot functional testing. The fluid transients for Unit 2 pressurizer safety and relief valve piping will also be reanalyzed in the future for Unit 2. Using the new fluid transients, the support loads will be reanalyzed, and any necessary modifications will be completed before Unit 2 system turnover to Operations.

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT
NUREG-0737, ITEM II.D.1
LIST OF COMMITMENTS

1. Modifications to the pressurizer safety and relief valve piping from the support load reanalysis will be completed before Unit 1 hot functional testing.
2. The fluid transients loads for Unit 2 pressurizer safety and relief valve piping will be reanalyzed.
3. Using the new fluid transients, the support loads for Unit 2 will be reanalyzed, and any necessary modifications will be completed before Unit 2 system turnover to Operations.