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

MAY 17 1991

WBRD-50-390/91-21
WBRD-50-391/91-21

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 - STEAM GENERATOR LEVEL TRANSMITTERS ACCURACY - SIGNIFICANT CORRECTIVE ACTION REPORT (SCAR) WBSCA 910207 - WBRD-50-390/91-21 AND WBRD-50-391/91-21 - FINAL REPORT

The subject deficiency was initially reported to NRC Region II on April 19, 1991, in accordance with 10 CFR 50.55(e) as SCAR WBSCA 910207. Enclosure 1 is TVA's final report on this subject. Enclosure 2 provides a list of commitments made in this letter.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

E. G. Wallace, Manager
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Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

MAY 17 1991

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN)
STEAM GENERATOR LEVEL TRANSMITTERS
WBSCA 910207
WBRD-50-390, 391/91-21

FINAL REPORT

DESCRIPTION OF CONDITION

While reviewing demonstrated accuracy calculations for quality improvements under the Watts Bar Self-Assessment Program, design engineers discovered that the steam generator level transmitters used to control auxiliary feedwater flow were incorrectly specified to perform at levels below the vendor minimum span. This error was identified for Foxboro model E13DM-MCA used to monitor the steam generator narrow range level whose connections are 233 inches apart. The condition applies to eight steam generator level transmitters which were purchased with an adjustable span between 200 inches of water column (minimum) and 850 inches (maximum). However, to compensate for the sense line reference leg water density, the minimum span limit was adjusted to be approximately 164 inches. An error in interpretation of the minimum acceptable span limit, as specified in Foxboro technical information TI-39-13 ("0-200 to 0-850"), led design engineers to believe 164 inches was compatible. Foxboro instruction MI 020-140 now specifies "200-850."

SAFETY IMPLICATIONS

Foxboro model E13DM-MCA transmitters are capable of being calibrated to values less than the stated minimum without causing an abrupt failure. However, under extreme conditions of design basis accidents, a calibrated span less than the specified minimum could result in unknown transmitter inaccuracies. These potential inaccuracies could cause the steam generator level to deviate from established system design limits during a design basis event.

These transmitters provide an input signal to controllers which compare the measurement value to the established level setpoint. The controller produces a signal to the associated level control valves. Positioning of the level control valves regulates auxiliary feedwater flow and thus maintains proper steam generator level.

Other qualified steam generator level post accident monitor indication is available in the main control room for operator use which would not be affected by this deficiency. The steam generator level can be directly controlled by placing the appropriate controller from the automatic to the manual mode. Abnormal fluctuations in steam generator levels introduced by auxiliary feedwater level control valves would be detected and corrected in this manner.

The primary purpose of the auxiliary feedwater system is to supply sufficient feedwater flow to the steam generators in the event of a loss of main feedwater to remove reactor decay heat and avoid reactor coolant system over-pressurization. The auxiliary feedwater system serves no required function during normal plant operations.

CORRECTIVE ACTION

All eight Foxboro E13DM-MCA transmitters mentioned will be replaced. These transmitters are Watts Bar unique identifier Nos. 1-LT-3-148, -156, -164, -171, -172, -173, -174, and -175. Further evaluation has determined that this condition does not exist for Unit 2 steam generator level transmitters. The Unit 2 transmitters, which have not been installed, were supplied by a different manunfacturer and do not have the identified span deficiency. Additionally, a review for this deficiency was performed on transmitters which perform a safety-related function and no additional deficiencies were discovered.

ENCLOSURE 2

LIST OF COMMITMENTS

All eight Foxboro E13DM-MCA transmitters will be replaced.