TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

NRC REGION ... ATLANTA, GEORGIA

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January 5, 1982

WBRD-50-390/81-44
WBRD-50-391/81-43

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - CVCS ANALYTICAL PIPING MODEL ERRORS - WBRD-50-390/81-44, WBRD-50-391/81-43 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on April 28, 1981 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8107. Interim reports were submitted on May 28, July 24, September 18, and December 10, 1981. Enclosed is our final report.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills

L. M. Mills, Manager
Nuclear Regulation and Safety

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cc: Mr. Richard C. DeYoung, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
CVCS ANALYTICAL PIPING MODEL ERRORS
WBRD-50-390/81-44, WBRD-50-391/81-43
10 CFR 50.55(e)
FINAL REPORT

## Description of Deficiency

Two analysis problems are involved in this nonconformance, and they involve analytical computer models of portions of the chemical and volume control system (CVCS). The analytical model of piping problem N3-62-5A did not match the piping design configuration. A portion of the piping system was modeled with the wrong insulation weight, and various portions of the piping model have geometry errors such as overlapping pipe members. These analysis errors could produce unconservative stress results. The piping model of problem N3-62-10A did not include valve weights. There are seven valves in this piping problem, and the omission of the valve weights could produce unconservative stress results. Both of these original analyses were performed in 1976 and, in our judgment, were caused by human error on the part of the analyst. The analysis errors mentioned above were discovered during an analysis review.

## Safety Implication

The increase in loads and stresses on the portion of the piping system modeled by piping problems N3-62-5A and -10A could cause the pipe to become overstressed, resulting in pipe failure, thereby reducing or eliminating the capability to control the chemical composition in the primary coolant. This condition would adversely affect the safe operation of the plant.

## Corrective Action

TVA has reanalyzed these piping problems (N3-62-5A and -10A) with the correct analysis model. Approximately 37 support changes were required. All piping stress analysts in the section responsible for this work have been informed of the details of this particular problem and have been instructed to be more thorough in developing analytical models of piping stress analysis.

All required support changes will be implemented before the respective unit fuel loading.