TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5N 157B Lookout Place

March 24, 1986

WBRD-50-390/86-13
WBRD-50-391/86-11

U.S. Nuclear Regulatory Commission
Region II
Attention: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - LACK OF THERMAL QUALIFICATION FOR THE RADIATION SAMPLING AND THE RADIATION MONITORING SYSTEMS PIPING - WBRD-50-390/86-13, WBRD-50-391/86-11 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Art Johnson on December 24, 1985 in accordance with 10 CFR 50.55(e) as SCR WBN EEB 8572. SCR WBN EEB 8624 was written to document the deficiency for unit 2. Our interim report was submitted on February 13, 1986. Enclosed is our final report.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley
Manager of Licensing

Enclosure
cc: Mr. James Taylor, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center (Enclosure)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
LACK OF THERMAL QUALIFICATION FOR THE RADIATION SAMPLING
AND THE RADIATION MONITORING SYSTEMS PIPING
WBRD-50-390/86-13, WBRD-50-391/86-11
SCR WBN EEB 8572 - UNIT 1
SCR WBN EEB 8624 - UNIT 2
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

The existing tubing for the radiation sampling system (system 43) and the radiation monitoring system (system 90) was installed to meet seismic qualification (category I) without adequately considering thermal movement. If these systems are subjected to an average through-wall temperature greater than 120°F, an overstress condition could occur due to thermal loads.

The cause of this problem has been determined to be a breakdown in communication between the engineering personnel responsible for conveying system operational data and the personnel responsible for analysis and support design.

Safety Implications

Inadequate design for thermal requirements could result in the degradation over the plant's lifetime of the radiation sampling and radiation monitoring lines due to the effects of thermal cycles and elevated temperatures which could adversely affect the capability of the lines to maintain their pressure boundary. The loss of pressure boundary could result in a direct release of liquid or gaseous radioactive material into the plant's environment. Also, loss of radiation monitoring lines could result in the failure of this system's instrumentation. This could allow a radioactive release inside containment to go undetected and prevent the automatic isolation of the containment vent system, and could lead to a greater than allowable release of radioactive material into the environment.

Corrective Action

TVA is performing a thermal evaluation/analysis of safety-related radiation sampling and radiation monitoring lines that have maximum operating temperatures which exceed 120°F. Drawings will be issued through ECN 6097 (U1) and ECN 6098 (U2). Supports and tubing configurations will be modified as necessary to assure proper thermal qualification. This work will be completed by the respective unit fuel loadings.

Also, a review of the remaining instrumentation systems (i.e., instrument sense lines) has been performed to verify that these systems do not need to be supported for thermal conditions beyond existing design/installation.

To prevent a recurrence of this deficiency, a series of review meetings has been conducted to discuss and clarify coordination requirements between electrical, civil and mechanical disciplines for radiation sampling and radiation monitoring lines, and project enginering procedure WBEP-EP-4331 is being written to define and control this interface. This procedure is expected to be issued by August 30, 1986.