

U.S. NUCLEAR REGULATORY COMMISSION
ATLANTA, GEORGIA
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

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June 30, 1983

U.S. Nuclear Regulatory Commission
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - SIS TRAIN B FLOW DEFICIENT - NCR
WBN NEB 8004 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector J. D. Wilcox on May 1, 1980 in accordance with 10 CFR 50.55(e). Interim reports were submitted on May 30, August 5, and November 6, 1980; January 15 and August 14, 1981; April 9 and September 7, 1982 and January 13, 1983. 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 Licensing

Enclosure

cc: Mr. Richard C. DeYoung, 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 SIS TRAIN B FLOW DEFICIENCY NCR WBN NEB 8004 10 CFR 50.55(e) FINAL REPORT

Description of Deficiency

During the performance of preoperational test W-3.1E on the Safety Injection System (SIS) the train B cold leg injection rate was found to be only 4000 gal/min, as compared to the required 4500 to 5000 gal/min. The flow restrictors added as corrective action to NCR SRP 19-W-10 corrected the problem of insufficient system pressure drop at Sequoyah units 1 and 2 and Watts Bar unit 1 train A. However, the minor configurational differences in Watts Bar unit 1 train B resulted in transferring the site of cavitation from the Residual Heat Removal System (RHRS) flow control valve to some other component of the system, causing choking (two phase) flow and reduced flow rate. The cause of the deficient flow is cavitation occurring at the residual heat removal (RHR) heat exchangers (HX) outlet valve at its 60 degree valve position. Accordingly, Watts Bar Preoperational Test Deficiency No. PT-43 was written.

Safety Implications

The flow deficiency would result in reduced SIS coolant to the reactor coolant system in the event of a LOCA. The flow would be less than that assumed in the plant safety analysis. The reduced coolant to the reactor, therefore, could result in degradation of the safe operation of the plant.

Corrective Action

Westinghouse, via their letter No. WAT-D-4196, has concurred with TVA's request to operate the RHR HX outlet valves 1-FCV-74-16 and 1-FCV-74-28 at 79° open. Subsequent testing of the valves at 79° open has resulted in the flow falling within the acceptable 4500-5000 gal/min range by eliminating cavitation. Thus, the Preoperational Test Deficiency No. PT-43 has been resolved. All TVA design project managers have been informed of this problem to prevent recurrences in future plant designs.