

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

10 A 9: 46 February 6, 1984

WBRD-50-390/82-56

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:

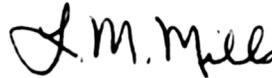
WATTS BAR NUCLEAR PLANT UNIT 1 - SETPOINT PROGRAM FOR OVERPRESSURE  
MITIGATING SYSTEM - WBRD-50-390/82-56 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on May 21, 1982 in accordance with 10 CFR 50.55(e) as NCR WBN NEB 8210. Interim reports were submitted on June 22 and September 27, 1982 and March 28, June 17, and September 30, 1983. Enclosed is our final report. TVA considers 10 CFR Part 21 to be applicable to this deficiency.

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. Millis, Manager  
Nuclear Licensing

Enclosure

cc (Enclosure):

Mr. Richard C. DeYoung, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

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1983-TVA 50<sup>TH</sup> ANNIVERSARY

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## ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 1  
SETPOINT PROGRAM FOR OVERPRESSURE MITIGATING SYSTEM  
NCR WBN NEB 8210  
WBRD-50-390/82-56  
10 CFR 50.55(e)  
FINAL REPORT

### Description of Deficiency

The setpoint program provided by Westinghouse (Pittsburgh, Pennsylvania) for the unit 1 cold overpressure mitigating system (OMS) could allow the 10 CFR 50, Appendix G, limits for reactor vessel fracture toughness to be exceeded in the event of a failure of a single power-operated relief valve (PORV). The OMS utilizes staggered operation of the PORVs so that if the first PORV fails to open to mitigate an overpressure transient, then the second PORV will open at a slightly higher pressure setpoint. For reactor coolant temperatures below 150°F, the setpoint for the second PORV has been chosen such that Appendix G limits can be violated for the mass input events of one or two centrifugal charging pumps operating at a maximum flow with isolation of the let down flow path.

This nonconformance is in violation of FSAR section 5.2.2.4.2.1 and is only applicable to unit 1.

When the original setpoint analysis was performed, Westinghouse attempted to provide additional flexibility by considering two centrifugal charging pump mass input events, but in so doing, the setpoints chosen did not ensure compliance with the single PORV failure criteria for single charging pump operation. The assumption of single charging pump operation is consistent with technical specification requirements for locking out all but one charging pump at reactor coolant cold leg temperatures below 310°F (reference draft technical specifications 4.1.2.3.2 and 4.1.2.4.2).

### Safety Implications

The 10 CFR 50, Appendix G limits are set to provide assurance that minimum fracture toughness requirements are met during a condition of normal operation in order to preserve the integrity of the reactor coolant pressure boundary (RCPB). Should these minimum requirements not be met, there is a possibility that the integrity of the RCPB could be compromised, thus resulting in a condition adverse to the safe operation of the plant.

### Corrective Action

Westinghouse is recalculating OMS setpoints based on the PORV data furnished by TVA, and will provide the new setpoints by January 31, 1984. The setpoints will then be implemented by TVA. The OMS will then be capable of maintaining overpressure transients below Appendix G limits for mass input events of 120 gal/min or less even in the event of a single PORV failure. The 120 gal/min mass input event is Westinghouse's design basis and represents injection from a single centrifugal charging pump with

inadvertent let down isolation. Section 5.2.2.4.2.1 of the FSAR is being corrected to show that the current Westinghouse analysis does not consider mass input from two centrifugal charging pumps.

According to Westinghouse, Watts Bar unit 1 is the only plant subject to the deficiency reported, and no further action to prevent recurrence is required.