

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

83 SEP 14 10:36  
September 9, 1983

WBRD-50-390/83-39  
WBRD-50-391/83-39

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:

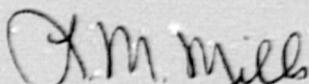
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - SENSING OF PIPE BREAKS IN COMPONENT  
COOLING SYSTEM .. WBRD-50-390/83-39, WBRD-50-391/83-39 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector  
Linda Watson on June 24, 1983 in accordance with 10 CFR 50.55(e) as  
NCR WEN MEB 8301. Our first interim report was submitted on July 22, 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, 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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1983-TVA 50<sup>TH</sup> ANNIVERSARY

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## ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
SENSING OF PIPE BREAKS IN COMPONENT COOLING SYSTEM  
NCR WBN MEB 8301  
WBRD-50-390/83-39, WBRD-50-391/83-39  
10 CFR 50.55(e)  
FINAL REPORT

### Description of Deficiency

The component cooling system (CCS) piping which supplies the condensate demineralizer waste evaporator (CDWE) is class G and H piping. This piping is isolated from the class C CCS piping by two isolation valves which close automatically upon a low-pressure signal. Low pressure would be indicative of a pipe break in the nonqualified piping. It has been shown by TVA calculations that no pressure switch set point could be determined which would reliably detect a pipe break yet allow continued CDWE operation during all modes of operation when no break had occurred. This demonstrates that pressure is not the appropriate parameter to sense for this application.

This problem was discovered while performing a NUREG-0588 evaluation of Watts Bar CCS instrumentation. TVA has determined that the root cause of the deficiency was the lack of a controlled procedure for determining instrument set points.

### Safety Implications

If the pressure switch set point were left as is, a small break in the CDWE CCS class G or H piping could go undetected and quickly deplete the train B side of the CCS surge tanks. This, coupled with a single active failure of the train A CCS, could result in a loss of short-term CCS supply to essential safety-related components and possible damage to CCS pumps due to cavitation. This could adversely affect the safety of operations of the plant.

### Corrective Action

To protect the qualified portions of CCS train B from a pipe break in the class G or H CDWE piping, class 1E controls will be added to automatically isolate the CCS supply to the CDWE if a low-low level should be detected in the train B side of either the unit 1 or unit 2 CCS surge tanks. Since the CDWE loop contains the only nonqualified piping on train B, this action will provide complete protection of the safety-related train B CCS piping from breaks in nonqualified piping. A check valve in the TVA class C portion of the CDWE discharge piping protects the system from drainage into a break from that direction.

TVA has issued engineering change notice (ECN) 4235 to accomplish this corrective action. All drawing revisions will be completed by October 18, 1983, and all construction work will be completed by November 1, 1983.

Also, TVA is in the process of issuing Electrical Design Standard DS-E18.1.10, "Instrument Set Points and Limits." This document will provide technical guidance on determining instrument set points, evaluating ranges, and accuracies of various measuring instruments. It will be issued by October 31, 1983, and should prevent recurrence of this type deficiency in the future.