

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

JAN 17 1989

WBRD-50-390/88-01
WBRD-50-391/88-01

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

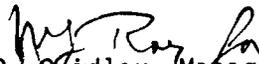
WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - AUXILIARY CONTROL AIR COMPRESSOR
CONTROL CIRCUITS MUST BE MANUALLY RESET AFTER LOSS OF OFFSITE POWER -
WBRD-50-390/88-01 AND WBRD-50-391/88-01 - FINAL REPORT

The subject deficiency was initially reported to NRC Region II Inspector
Bob Carol on December 31, 1987, in accordance with 10 CFR 50.55(e), as
Condition Adverse to Quality Report (CAQR) WBP 871085. Our interim report was
provided on January 27, 1988. Enclosure 1 provides TVA's final report.
Enclosure 2 provides a listing of commitments made in this submittal.

If there are any questions, please telephone G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. Gridley, Manager
Nuclear Licensing and
Regulatory Affairs

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

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cc (Enclosures):

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
AUXILIARY CONTROL AIR COMPRESSOR CONTROL CIRCUITS MUST BE
MANUALLY RESET AFTER LOSS OF OFFSITE POWER
WBRD 50-390/88-01 AND WBRD 50-391/88-01
CAQR WBP 871085
10 CFR 50.55(e)

FINAL REPORT

Description of Deficiency

Upon the loss of offsite power, the auxiliary control air (ACA) compressors' control circuits become degenerated. These circuits must be manually reset at the ACA compressor local control panel when power is restored. This condition violates the Watts Bar design basis stipulated in System Description N3-32-4002 which states, "Once the compressed air system has been placed in operation, no further action or operator intervention is required. No credit has been taken for manual operator actions following any accident."

The root cause of this deficiency is attributed to procedural inadequacy. The ACA system design was completed and drawings issued before development of the system description document. The system description document contains both the design criteria and system description for this system. However, it appears that the design drawings for the ACA system were not reviewed for compliance with the system description upon issuance.

Safety Implications

If the ACA compressors are automatically unloaded from their power supply upon a loss of offsite power and ACA-supplied components operate, then a control air pressure bleed-down would occur. There are no calculations which document how long systems using auxiliary control air will remain operable based on reserve air capacity. The affected systems and components (auxiliary feedwater control valves, main steam pressure relief valves, Auxiliary Building Gas Treatment System dampers, Emergency Gas Treatment System dampers, and control building heating, ventilating, and air conditioning) are required to mitigate the consequences of a primary or secondary coolant line break. Therefore, the potential for this deficiency to have adverse safety impact only becomes a concern in the event of such a line break concurrent with a loss of offsite power. Mitigating factors include reserve air capacity, procedural requirements to start the nonsafety-related station air compressors, and the procedural precautions for the auxiliary control air compressors to be manually reset following restoration of power. However, without an analysis, it is conservatively considered that this deficiency has the potential to adversely affect the safe operation of the plant.

Corrective Action

A calculation has been generated to document the ACA system's capability to supply air to the safety grade equipment following a loss of offsite power. This calculation documents that the ACA system can supply air for approximately 20 seconds. As corrective action, time-delay relays will be added to the ACA compressors control circuit so that manual reset of interlocks are not required. This work will be accomplished by Design Change Notice (DCN) P-01154-A. Furthermore, under the long-term electrical calculation program, a diesel generator loading analysis calculation will be prepared to add the ACA compressors to the loading sequence analysis. All of these corrective actions will be completed by fuel load of unit 1.

Since issuance of the ACA system design, program enhancements have been implemented which will preclude similar occurrences. Nuclear Engineering Procedure (NEP)-3.2 states the requirements for maintaining and controlling design basis documents for use in defining, maintaining, and establishing the upper-tier documentation for a nuclear plant. This procedure also requires that changes to design input be evaluated and, where appropriate, will be reflected in revisions to other affected design input and design output documents. NEP-5.1 further states that the design basis for output documents shall be traceable to design inputs. The current Employee Training Program was established by NEP-1.2 to ensure all Nuclear Engineering employees are properly trained in engineering procedures.

ENCLOSURE 2

LIST OF COMMITMENTS

1. Time-delay relays will be added to the auxiliary control air (ACA) compressors' control circuit so that manual reset of interlocks are not required.
2. A diesel generator loading analysis calculation will be prepared to add the ACA compressors to the loading sequence analysis.