TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II



August 18, 1983

WBRD-50-390/83-15
WBRD-50-391/83-14

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 - NEGATIVE PRESSURE IN CONTROL BUILDING MECHANICAL EQUIPMENT ROOM - WBRD-50-390/83-15, WBRD-50-391/83-14 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector P. Fredrickson on March 3, 1983 in accordance with 10 CFR 50.55(e) as NCR WBN SWP 8316. Our first interim report was submitted on March 29, 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





IE-27

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
NEGATIVE PRESSURE IN CONTROL BUILDING MECHANICAL EQUIPMENT ROOM
NCR WBN SWP 8316
WBRD-50-390/83-15, WBRD-50-391/83-14
10 CFR 50.55(e)
FINAL REPORT

## Description of Deficiency

Design of the control building heating, ventilation, and air conditioning (HVAC) system does not provide for positive pressurization of the mechanical equipment room (MER). Preop Test Deficiency PT-133, documented that a negative (-) pressure condition of 0.125 and 0.260 inches of $H_2O$ was measured in this room while the HVAC system was operating in the normal and emergency modes, respectively. The Watts Bar FSAR sections 9.4.1 and 6.4 require that a positive pressure be maintained in the control building relative to the outdoor pressure to minimize air inleakage. This deficiency occurred because TVA's Division of Engineering Design (EN DES) documents (WBN PSAR and WBN Design Criteria WB-DC-40-20) used for the design of the control building HVAC systems did not require inclusion of the MER in the habitability area requiring a positive pressure. Therefore, the design finalized in 1974 did not conform to the requirements of the Watts Bar FSAR submitted in 1976.

## Safety Implications

In the event of a radioactive release or toxic chemical spill, undesirable infiltration into the main control room (MCR) and other areas serviced by the Main Control Room Habitability System (MCRHS) could occur. This could adversely affect operating personnel and thereby jeopardize safe operation of the plant.

## Corrective Action

TVA issued engineering change notice (ECN) 3740 to modify the MCRHS HVAC ductwork so as to prevent a negative static pressure condition in the MER. A return air inlet, which is located in the MER and common to both the operating and standby air handling units (AHU) has been eliminated. A new supply grille, with balancing damper, has been provided in the AHU's supply ductwork in the MER. The air distribution ratio of supply to return is now such that a positive pressure is ensured. Also, the leak paths which were discovered around cable penetrations between the MCR and the spreading room have been eliminated by sealing with foam. Positive pressurization of all areas defining the MCRHS area, in both the normal and the control room isolation modes of operation, as described in the Watts Bar FSAR sections 9.4.1 and 6.4, will now occur. WB-DC-40-20 has been deactivated and is no longer in use.

Investigation has shown that Bellefonte, the only other TVA plant presently under construction, is designed such that all areas served by the MCRHS will be at a positive pressure. This item has been referred to TVA's Deferred Nuclear Plants Project for design consideration on future plants.