

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

June 1, 1984

WB RD-50-391/84-24 P12: 23
WB RD-50-391/84-24

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 - MAIN CONTROL ROOM PRESSURIZATION
BOUNDARY LOSS THROUGH FIRE PROTECTION PIPING - WB RD-50-390/84-26,
WB RD-50-391/84-24 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
C. Julian on May 3, 1984 in accordance with 10 CFR 50.55(e) as
NCR WBN MEB 8414. 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

D S Kammer

for 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
MAIN CONTROL ROOM PRESSURIZATION BOUNDARY LOSS
THROUGH FIRE PROTECTION PIPING
NCR WBN MEB 8414
WBRD-50-390/84-26 AND WBRD-50-391/84-24
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

During the investigation of generic concerns for NCR WBN WBP 8335 (WBRD-50-390,391/83-70,65), it was found that the Technical Support Center (TSC), which is part of the main control room habitability zone (MCRHZ), has fire protection system (FPS) piping which is seismically supported category I(L) for position retention only. This FPS piping is air-supervised with control air in order to detect the inadvertent tripping of a spray nozzle or a pipe break (the control air line remains outside the MCRHZ). This configuration inadvertently allows a direct path from the control air compressors to the MCRHZ in the event the FPS piping fails inside the zone during a seismic event.

The design requirements for the addition of air-supervision to the existing FPS piping in the TSC were incorporated into plant design under engineering change notice (ECN) 4385 (which was issued on November 21, 1983). However, this ECN was not sent to the Nuclear Engineering Support Branch (who has responsibility for the main control room habitability system (MCRHS)) for review, and the potential direct path from the control air compressors to the MCRHZ was then incorporated into the final design.

Safety Implications

Because the FPS piping is supported for position retention only, the piping could rupture inside the MCRHZ allowing entrance of unfiltered air into the MCRHZ when isolation of the zone is required. The breach in isolation caused by a break in the FPS piping itself would not be large enough to cause a safety concern within the MCRHZ. However, because the FPS piping is air-supervised, a breach in the FPS piping could allow a pressurized flow of control air and airborne contaminants to continuously flow into the MCRHZ at a rate which could exceed the capability of the MCRHS to filter the contaminants out. This could adversely affect the safety of the control room personnel and, consequently, safe operation of the plant.

Corrective Action

TVA has analyzed the effects of leakage into the MCRHZ from the FPS and has determined that the leakage must be less than 2 scfm. An orifice and a seismically qualified check valve have been incorporated into the design of the control air line under ECN 4843 as well as the requirement to replace the existing control air regulator with a seismically qualified one. These modifications will limit the leakage into the MCRHZ to less than 2 scfm, and installation of these components will be complete by June 15, 1984. TVA has also determined that there are no other sources of unfiltered pressurized air that could leak into the MCRHZ.

TVA had issued engineering procedure (EP) WBP-EP-43.24 before this deficiency was identified (but after its occurrence) and believes that the requirement in the procedure calling for all piping in the MCRHZ to be seismically supported to protect the pressure boundary integrity is sufficient to prevent this problem from recurring. As an additional preventive action, TVA has instructed all WBN design personnel by memorandum to squadcheck all drawings which interface with the MCRHS to NEB for their review.