

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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October 19, 1984

WBRD-50-390/84-46

WBRD-50-391/84-41

U.S. Nuclear Regulatory Commission
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

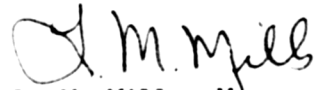
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - UNACCEPTABLE FOAM PLASTIC INSULATION ON
SPENT FUEL COOLING SYSTEM - WBRD-50-390/84-46 AND WBRD-50-391/84-41 - FINAL
REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
P. E. Fredrickson on September 19, 1984 in accordance with 10 CFR 50.55(e) as
NCR WBN MEB 8436. Enclosed is our final report.

If you have any questions, please get in touch with R. H. Shell at
FTS 358-2688.

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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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
UNACCEPTABLE FOAM PLASTIC INSULATION ON SPENT FUEL COOLING SYSTEM
NCR WBN MEB 8436
WBRD-50-390/84-46 AND WBRD-391/84-41
FINAL REPORT

Description of Deficiency

Foam plastic insulation (TVA class IV) was found to be installed on the Spent Fuel Pool Cooling and Cleanup System (SFPCCS) pumps A-A, B-B, and C-S, and heat exchangers (Hx) A and B. This is shown on TVA drawings 47W454-403(R1), -405(R1), and -406(R1) for Watts Bar Nuclear Plant (WBN). The SFPCCS at WBN is a safety-related (TVA class C) seismic category I system per WBN FSAR section 9.1.3.3.1.

Insulation material installed on safety-related stainless steel (SS) piping must be certified to meet NRC Regulatory Guide 1.36, "Nonmetallic Thermal Insulation on Austenitic Stainless Steel." This regulatory guide gives guidance on acceptable levels of chloride and fluoride contaminants in nonmetallic insulation, as well as acceptable concentrations of sodium and silicate which, in sufficient quantities, inhibit corrosion. Foam plastic insulation cannot meet the requirements of Regulatory Guide 1.36 because of high chloride content.

TVA has determined that the cause of this deficiency is that at the time of original drawing issue, a color chart was used to show contractor-erected piping and equipment insulation. This chart indicated that insulation class IV (foam plastic) was to be used on equipment (i.e., pumps, Hx, etc.) without regard to whether the equipment was carbon steel (CS) or SS. Neither Watts Bar Design Project (WBP) Engineering Procedure (EP) 43.18, "Insulation/Heat Tracing Drawings for Safety-Related Systems" nor TVA Mechanical Design Guide DG-M18.9.1 gave any indication that foam plastic insulations cannot satisfy Regulatory Guide 1.36 criteria. Thus, the responsible designers were unaware of this condition.

Safety Implications

Excessive levels of chloride and fluoride contaminants in nonmetallic thermal insulation that is in contact with safety-related SS piping could promote stress corrosion cracking in the piping. This could adversely affect the safe operation of the plant.

Corrective Action

TVA will revise the affected SFPCCS design drawings to specify that a mass type insulation which will conform to the requirements of Regulatory Guide 1.36 be used. The existing foam plastic insulation will be removed and the affected components will be cleaned per TVA General Construction Specification G-29M, "Process Specification for Welding, Heat Treatment, Nondestructive Examination, and Allied Field Fabrication Operations." New insulation will be installed per the revised drawings. This corrective action will be accomplished per engineering change notice (ECN) 5188.

To prevent recurrence of this deficiency, TVA will revise WBP EP 43.18 to include G-29M as a reference. Section 3.1.15 of G-29M addresses the types of insulation that are approved for conformance to Regulatory Guide 1.36. Responsible system reviewers have been informed that foam plastic insulation does not meet Regulatory Guide 1.36 as a result of this condition. These actions should prevent recurrence of this deficiency.

All corrective actions for this item will be completed by November 30, 1984.