

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

February 25, 1985

WBRD-50-390/85-05 85 FEB 28 PDR:17
WBRD-50-391/85-04

U.S. Nuclear Regulatory Commission
Region II
Attn. Mr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. Grace:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - POTENTIAL DEFICIENCY IN
IMPROPERLY RATED FIELD WIRING TO SOLENOID VALVES - WBRD-50-390/85-05 AND
WBRD-50-391/85-04 - FINAL REPORT

Our letter to you dated February 1985 and its enclosure concerning NCR WBN
EEB 8425, contained certain typographical errors in the plant identifi-
cation reference numbers and symbols. Enclosed is a substitute letter and
report with the correct plant identification.

If you have any questions, please get in touch with R. H. Shell at
FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Homer
for J. W. Hufham, Manager
Licensing and Regulations

Enclosure

cc: Mr. James Taylor, 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
POTENTIAL DEFICIENCY IN IMPROPERLY RATED FIELD WIRING TO SOLENOID VALVES
WBRD-50-390/85-05 AND WBRD-50-391/85-04
NCR WBN EEB 8425
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

A deficiency has been identified at Watts Bar Nuclear Plant (WBN) involving field-installed electrical cables. Specifically field wiring that terminates within the housing of certain solenoid valves has insulation which is not rated for temperatures which could possibly be generated within the valves. This condition was originally identified in NRC-OIE Information Notice 84-68.

Two manufacturers of solenoid valves procured by TVA for WBN and requiring field wiring to terminate within the housing are Target Rock and Valcor. These valves have been identified as having potential internal temperatures reaching 280° F. TVA presently uses wire with insulation rated at either 90° C (194° F) or 125° C (257° F) to terminate solenoid valves. Solenoid valves from other manufacturers procured by TVA which do not have vendor-supplied pigtails could also be affected.

The cause of this problem is the lack of documentation on the operating valve housing temperatures.

This condition has also been identified for Bellefonte Nuclear Plant (BLN) and is being separately reported as nonconformance report (NCR) BLN EEB 8418. (BLRD-50-438/85-03, BLRD-50-439/85-03).

Safety Implications

In general, the use of electrical cable with inadequate temperature-rated insulation within a high ambient temperature valve body could cause the insulation to degrade prematurely. This could result in cable insulation failure and could possibly result in a failure of the ability of an affected valve to perform an intended safety function. With regards to WBN, TVA has determined by analysis that only two Target Rock valves, TVA UNID Nos. 0-FSV-32-61-A and 0-FSV-32-87-B, would be significantly affected by the 280° F temperature which could be reached inside the valve housing. These valves control the flow of cooling water to the control air compressors. At their rated current, these cables can operate for 8000 hours (0.913 year) at 280° F. These valves fail open and they can be manually isolated and bypassed, so the potential for these valves adversely affecting the safe operation of the plant is minimal.