

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

December 16, 1981 10:01

WBRD-50-390/81-71
WBRD-50-391/81-67

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - QUALIFICATION OF EPOXY GROUT FOR
SAFETY-RELATED APPLICATIONS - WBRD-50-390/81-71, WBRD-50-391/81-67 -
SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
R. V. Crlenjak on August 27, 1981 in accordance with 10 CFR 50.55(e)
as NCR 3567R. Our first interim report was submitted on September 18,
1981. Enclosed is our second interim report. We expect to submit our next
report by February 2, 1982.

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

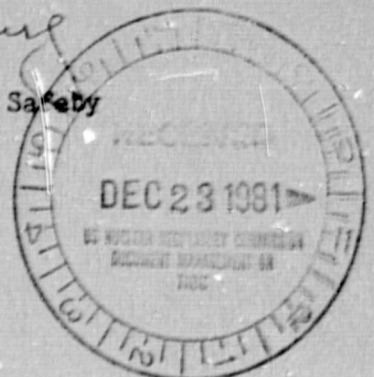
Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills
L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555



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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
QUALIFICATION OF EPOXY GROUT FOR SAFETY-RELATED APPLICATIONS
WBRD-50-390/81-71, WBRD-50-391/81-67
10 CFR 50.55(e)
SECOND INTERIM REPORT

Description of Deficiency

Epoxy grout was specified on design drawings at specific anchor bolt locations inside containment where temperatures may exceed 120° F. Epoxy grout may have its load-carrying capabilities reduced at temperatures above 120° F. Also, the epoxy grout has not been qualified to a radiation environment inside containment.

The apparent cause of this deficiency is that during design stages a review of the technical specifications of the grout with respect to radiation and temperature was not conducted.

Interim Progress

TVA has identified all the supports inside containment for which epoxy grout was specified. To address the issue of elevated temperature effects, TVA has conducted a mathematical model analysis of the steam generator anchor bolts to develop the temperature profile which would be expected during a main steam line break. This "worst case" situation would have an expected duration and associated high temperatures that would raise the temperature of the epoxy at the head of the anchor to about 160° F.

TVA is conducting tests at our Singleton Materials Engineering Laboratory (SME) on epoxy grouted anchors at elevated temperatures. These tests will provide the necessary information to determine allowable design loads at accident and normal operating temperatures for the two types of epoxy grouts used at Watts Bar Nuclear Plant.

Each support in question is being reviewed to determine its design loading and design temperatures. When SME test results are available, the load-carrying effectiveness of the epoxy grouted anchors will be determined.

Published information on epoxy polymers of this type show no loss of strength because of radiation dose levels expected during the life of the plant. The radiation effects because of a loss of coolant accident are not sufficiently high to induce an epoxy failure.

Present long-term experience with epoxy polymers is roughly one-half that of an expected plant life. Epoxy polymers are relatively new and compounds are constantly being refined. TVA is evaluating the possibility of establishing an ongoing testing program to continually monitor the strength of the epoxy grout throughout the life of the plant.