

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

April 5, 1984

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

Please refer to my letter to you dated March 20, 1984 which provided TVA's responses to the audit findings identified during the February 14-16, 1984 NRC audit of the Watts Bar Nuclear Plant equipment qualification program.

TVA indicated in that letter that additional time would be required for submitting responses to several of the audit findings due to their scope and/or nature. Enclosed are TVA's responses to two of these findings.

Please note that our March 20, 1984 submittal stated that a response would be provided by March 30, 1984 for audit findings 1, 2a, and 2h on Chicago Fluid Power main steam isolation valve actuators. In order to provide a response to these items, we must obtain additional documentation from the vendor. Efforts are currently underway to obtain the required information; however, it is anticipated that our responses to these items can not be provided until May 7, 1984.

If you have any questions concerning this matter, please get in touch with D. B. Ellis at FTS 858-2681.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills
L. M. Mills, Manager
Nuclear Licensing

Sworn to and subscribed before me
this 5th day of April 1984

Paullette D. White
Notary Public
My Commission Expires 9-5-84

Enclosure

cc: U.S. Nuclear Regulatory Commission (Enclosure)
Region II
Attn: Mr. James P. O'Reilly Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

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WATTS BAR NUCLEAR PLANT
OUTSTANDING ITEMS RESULTING FROM THE NRC AUDIT OF TVA'S
EQUIPMENT QUALIFICATION PROGRAM

Generic Item 11

During the plant walkdown, the Staff and its consultant made the following observation:

- a. Flexible conduits are used for class 1E cable termination. These conduits are not qualified for the environmental effect. There is a probability that these conduits may fail and provide a leakage path for water/steam to enter the class 1E equipment. These conduits should be qualified for the environment in which they are located to avoid this problem. (Reference generic item 7, IE IN-83-72, No. 13.)
- b. Terminal blocks are used inside the containment while they are listed as only for outside containment application. Justify this discrepancy.
- c. Some terminal block enclosures did not have any weephole. This will require the enclosure to be qualified for the pressure they will be exposed to. Confirm that these boxes are qualified to withstand the pressure conditions caused by the design bases accident.

TVA Response

- a. This condition was recently reported to NRC-Office of Inspection and Enforcement Region II in accordance with 10 CFR 50.55(e) (NCR WBN EEB 8405). For field installations, TVA uses stainless steel flexible conduit inside primary containment rather than Anaconda flexible conduit referred to in IE Information Notice 83-72. However, TVA is presently reevaluating the vendor's qualification for the applicable electrical equipment, located in harsh environments, that is required for accident mitigation and safe shutdown. Where the vendor's qualification is contingent upon the conduit to equipment interface being sealed, either justification will be provided for not sealing or qualified seals will be installed to ensure that this equipment will not fail due to water/steam intrusion through the conduit system. The results of these evaluations will be detailed in our final 10 CFR 50.55(e) report.
- b. Although qualification data is only provided for terminal blocks outside containment, they have been used in some cases inside primary containment. For example, many vendor's class 1E equipment (located inside containment and required for safe shutdown) has been qualified with terminal blocks. This application of terminal blocks inside containment is allowed.

However, there were also some applications of terminal blocks within intermediate terminal boxes located inside containment. Originally, TVA initiated a program to replace terminations within intermediate terminal boxes with environmentally qualified splices (using Raychem Type N heat shrinkable products) for the class 1E equipment required for safe shutdown in event of a LOCA or HELB. During the recent NRC audit, the box viewed contained terminal blocks which were scheduled to be replaced under this program. The box was located on one section of instrument panel 1-L-182 and contained GE-type CR 151B terminal blocks. Some of the terminations are to be replaced (as described above) with qualified splices for certain class 1E equipment (e.g. LT-3-51). These design requirements were established before the issuance of 10 CFR 50.49. At the time of the site visit by NRC-NRR, the construction work package was not complete for replacing these terminations with splices. TVA's original response that there were no terminal blocks used inside containment was based on erroneous information that all required circuits had been spliced as described above.

However, there are three conditions for which the use of terminal blocks in intermediate terminal boxes located inside containment has been allowed.

- (1) Terminations are necessary to accommodate calibration and facilitate maintenance or replacement of some class 1E equipment (e.g. RTDs for PAM).
- (2) Some class 1E circuits have terminal blocks in their local controls. Although these local controls are electrically isolated from the circuit and administratively controlled during normal operation, TVA will reevaluate these circuits to assure that a terminal block failure cannot adversely affect the circuit.
- (3) Since the original program was initiated, additional class 1E equipment that is required for safe shutdown has been identified during review as required by 10 CFR 50.49. Terminations in intermediate terminal boxes for this equipment are presently being evaluated.

Where terminal blocks for class 1E circuits inside containment have been utilized in intermediate terminal boxes (as identified in items 1 through 3 above), TVA uses GE types EB 5, EB 25, and CR 151B terminal blocks within the boxes. TVA is evaluating available test data on these terminal blocks in conjunction with NRC's component-specific comments on EQS EEB-TB-1 to determine their ability to function in the environmental conditions of containment. If the installed configuration cannot be qualified, the terminal blocks will be replaced with qualified splices.

- c. The need for weepholes in intermediate terminal enclosures that house class 1E circuits inside primary containment will be determined dependent upon the results of GE terminal block evaluation as discussed in item b above.

Limitorque Comment No. 3

During the walkdown, it was noted that the flux conduit was broken at the connector and pulled away exposing the cables.

TVA Response

We have determined that the damaged flexible conduit must be replaced. This replacement will be completed by May 14, 1984.