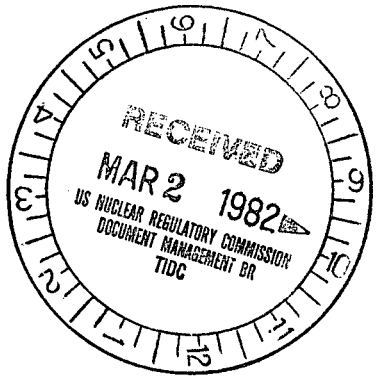
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 1, 1982



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

Dear Ms. Adensam:

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

Enclosed is TVA's response to NRC concerns about fire protection at Watts Bar Nuclear Plant (WBN). This information was discussed with the NRC during a meeting on February 18, 1982.

Information concerning draft Safety Evaluation Report items 49 and 50 will be addressed in TVA's comparison of WBN to Appendix R of 10 CFR. This is scheduled for submittal by July 1, 1982.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 1st day of March 1982

Notary Public
My Commission Expires 4/4/82

B002
1/1

Enclosure
cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
FIRE PROTECTION

1. NRC Concern: TVA should demonstrate that an explosion involving an askerel filled transformer will not damage redundant divisions of safety related equipment required for safe shutdown of the plant.

   TVA Response: TVA's Divisions of Nuclear Power (NUC PR) and Engineering Design (EN DES) Electrical Engineering Branch (EEB) will coordinate a revised response which will attempt to provide a technical basis for our position that the 6.9 kV to 480V power transformers in question will not fail catastrophically such that essential equipment needed for shutdown will be damaged. The analysis shall address the probability of blast, missiles, and fluid jet forces. The results of this analysis will be submitted to the NRC by July 9, 1982.

2. NRC Concern: TVA should state that the WBN electrical fire barrier penetration design meets the requirements of ASTM E119.

   TVA Response: TVA will revise Page 12-6 of the response to question 12.b(iii) in the September 1980 fire protection submittal as follows:

   The attached time-temperature curves, Figures 12.b(iii)-5 and 12.b(iii)-6 for cable tray rows 1 and 2 respectively, show the extremely rapid rise of temperatures within both rows of cable bundles. The maximum temperatures recorded were experienced in a 75- to 90-minute segment of the test, occurring outside the area of coated cables. No appreciable difference of rate of flame propagation between the cables in either of the two rows of trays was observed during the test. During the test, light smoke was observed coming out of the exhaust duct. This indicated leakage, as planned, was through the holes provided in the cable slot seals.

   The results of the test were that no fire burned through the penetration onto the cold side of the test facility and the pressure seal maintained its integrity. The results from this test demonstrate that the design provides an effective fire stop and pressure seal under simulated conditions when tested as a completed system.

Moreover, fire tests of identical design using the same type of cables and sealant material have been conducted by others. The mockup was for a floor penetration arrangement and was tested to the time-temperature curve of ASTM E-119. Test results are recorded in report serial No. 26543 dated October 28, 1975, of Factory Mutual Research Corporation. The design of electrical penetration fire stops for cable-cable tray arrangements at Watts Bar are shown in Figures 12.b(iii)-1 and -2 and are more conservatively designed than penetration No. 2 of Factory Mutual (FM) report No. 26543. Each cable tray has its own cable slot or cable sleeve opening through fire barrier, each opening has a 1-inch thick fire barrier material anchored on each side of fire stop, and exposed surfaces of cables are coated with an ablative material for a minimum 5-foot distance from the fire barrier board. It is therefore TVA's position that, based on a more conservative design, together with TVA's own testing program, the Watts Bar electrical penetration fire stops meet or exceed the 3-hour fire test requirements of ASTM E 119.

The design of the inplant cable tray supports are typically shown in Figures 12.b(iii)-1 and 12.b(iii)-2 for wall and floor penetrations with cable trays, respectively. During the tests conducted by TVA, warpage of the cable trays and supports was observed to occur outside the cable coated area. No visual distortion of the cable trays or their supports was observed at the wall opening following the test.

The design of the mechanical penetration fire stops are based on similar designs that use the same type of sealant and damming materials and that have been tested by others to the standard time-temperature curve of ASTM E-119.

3. NRC Concern: TVA should state in writing that no hydrogen lines are routed through safety related areas. If hydrogen lines are routed through safety related areas, state in writing that the hydrogen lines are either seismically qualified or that flow limiters are provided.

TVA Response: TVA has previously documented that the hydrogen line associated with the Chemical Valve Control System (CVCS) system is both seismically qualified and provided with flow limiting isolation valves. See the responses to Item No. 13 transmitted to NRC by letter from L. M. Mills to E. Adensam dated August 28, 1981.

4. NRC Concern: Valve actuation circuits from the local fire alarm control panels are not class A supervised circuits.

TVA Response: Section E.1 of Appendix A to Branch Technical Position 9.5-1 requires fire detection systems to be designed as a minimum to comply with NFPA 72D. Plants of Watts Bar's vintage may be allowed to deviate from NFPA 72D if such deviations are identified and justified. NFPA 72D does not specifically require electrical supervision of valve actuation circuits. Consequently, the capability for class A supervision of the output circuits between the local fire alarm control panels and the solenoid operated pilot valve for deluge and preaction valves has not been provided by the Watts Bar detection system supplier. The manufacturer has indicated that while the company does not manufacture a supervisory module specifically intended for use with preaction or deluge valves other modules may be adaptable for such use.

However, since all alarm circuitry associated with the system is provided with class A supervision, there is more than reasonable assurance that an alarm will be received both at the affected local fire alarm control panel and the central alarm station in the main control room for a fire condition in any area of the plant. Therefore in the event of loss of valve actuation circuit integrity the fire brigade can manually actuate the control valve at the local control valve station. Pressure switches are installed downstream of the deluge and preaction valves and are intended to provide control room indication of valve status. The pressure switch circuits are class A supervised. Therefore, failure of any suppression system valve to open in a fire alarm condition for its associated detection zone will be indicated in the main control room.

TVA has previously committed to increase surveillance testing frequency for the actuating circuits from every 12 months to every 6 months. The Watts Bar technical specifications will reflect this commitment. It is TVA's position the present design and installation of the Watts Bar fire detection and alarm system fully complies with Appendix A to Branch Technical Position 9.5-1.