



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

November 27, 1984

Docket Nos: 50-390  
and 50-391

APPLICANT: Tennessee Valley Authority

FACILITY: Watts Bar Nuclear Plant  
Units 1 and 2

SUBJECT: SUMMARY OF MEETING TO DISCUSS TVA'S APPEAL REGARDING FIRE  
PROTECTION FOR THE WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

On November 14, 1984, representatives of TVA and the NRC staff met to discuss TVA's appeal of the staff's position regarding fire protection at the Watts Bar Nuclear Plant, Units 1 and 2. TVA's position is stated in their October 15, 1984, letter and the staff's position is stated in a letter to TVA dated November 6, 1984. Attendees are listed in Enclosure (1).

T. Novak chaired the meeting. In his opening remarks he requested (1) TVA to state the exact nature of their appeal, (2) the NRC staff to state their requirements and the safety significance or basis for their requirements, and (3) TVA to discuss their proposal and how it provides an equivalent level of safety to the staff's requirements.

TVA stated that there were five items under issue after the appeal meeting of August 29, 1984 (see meeting summary dated October 3, 1984): the sprinkler system, intervening combustibles, the derating of fire doors, the protection of penetrations (stairways, HVAC duct penetrations, hatches, etc.) and the deficiencies discovered during the qualification testing of the 3M fire retardant materials. Of these issues, TVA was appealing the staff's position regarding the criteria to be used to resolve the issues on the general fire protection sprinkler system and on the 20 foot or greater separation of redundant safe shutdown equipment with intervening combustibles inbetween. Specifically, TVA was appealing Item 1 of the staff's November 6, 1984, letter and the following statement found in the Conclusion section of that letter: "The staff's conclusion that the hazards of intervening combustibles located between redundant shutdown divisions must be mitigated throughout the intervening space remains the same." TVA stated that their position is that their design criteria (as stated in the October 15, 1984, letter) for general fire areas throughout the plant meet the requirements of NFPA-13, and that TVA has committed to use stricter criteria in certain areas of the plant to ensure that a 20 foot area between redundant safe shutdown equipment and cables is adequately protected by the sprinkler system.

The staff stated that the requirements TVA is being required to comply with are found in Sections C.7.C and C.5.E of BTP CMEB 9.5-1 which deal with the guidelines regarding fire protection for the cable spreading room and cable trays. In summary, the staff position is that in a fire area with two safety-related trains, the applicant must ensure that, in the event of a fire, one train is

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"free of fire damage," and the fire must be controlled or extinguished. "Free of fire damage" was defined to mean the equipment does not need repair or replacement after a fire. The staff further stated that the defense in depth objective is to prevent large fires by extinguishing them or controlling them.

In addition, the staff pointed out that the 20 foot separation requirement is based on the conditions that there are no intervening combustibles within that 20 feet and that there is an adequate sprinkler system. The staff's position is that the 20 foot strip with intervening combustibles and a sprinkler system as proposed by TVA, is not equivalent to a 20 foot strip with a sprinkler system and without intervening combustibles. The staff stated that TVA seemed to be emphasizing the issue concerning intervening combustibles while the staff has determined that, if the issue of the inadequate sprinkler system throughout the facility is resolved, then the issue of intervening combustibles will be resolved. The staff stated that the proposed implementation of TVA's criteria will not ensure that a fire at the floor level will be extinguished and therefore, the consequences of a fire will not be mitigated. TVA stated that the cumulative obstructions found throughout the Watts Bar plant can still permit heat to actuate the sprinkler system and control the fire and the heat plume created by the event. The staff stated that the nature of the obstructions are such that the heat may be prevented from reaching the sprinkler system to ensure adequate mitigation of the fire.

TVA made a slide presentation (Enclosure(2)) stating their proposal and reiterating their belief that, when implemented, the modifications to the sprinkler system will compensate for the intervening combustibles. TVA stated their position that implementation of their October 15, 1984, proposed criteria, will provide an area suppression system at the Watts Bar facility that meets or exceeds NFPA-13 requirements, and that the fire protection system will be adequate to protect one path of safe shutdown equipment. In summary, TVA asked Mr. Novak to determine if 20 feet of separation of redundant safe shutdown equipment with intervening combustibles and an adequate sprinkler system inbetween combined with compliance with NFPA-13 for the general area sprinkler system provides adequate compliance with the NRC fire protection rules and guidelines.

Mr. Novak stated that he needed additional time to consider the appeal and would notify TVA of his decision the following day.

#### Results of Appeal Meeting

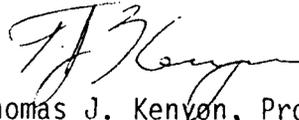
On November 15, 1984, W. Johnston (NRC/AD/DE) and R. Shell (TVA/Licensing) were informed of Mr. Novak's decision, as follows:

- (1) A minimum of 30 feet of separation with intervening combustibles and a sprinkler system which meets the stricter criteria would provide equivalency to 20 feet of separation with an adequate sprinkler system and no intervening combustibles.

- (2) The stricter criteria do not need to be applied to all fire areas that contain safety/shutdown-related systems (both cables and components). The stricter criteria must be applied to the 30 foot area discussed in paragraph (1) above.

TVA was requested to submit a deviation request to Appendix R of 10 CFR Part 50 stating their revised criteria and providing their justification for the deviation.

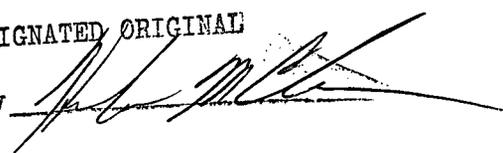
In summary, Mr. Novak concluded that 30 feet of separation of redundant safe shutdown equipment with intervening combustibles and the stricter criteria (defined below) inbetween combined with compliance with NFPA-13 for the general area sprinkler system should provide adequate compliance with the NRC fire protection rules and guidelines. The stricter criteria to be applied is the stricter criteria proposed in TVA's October 15, 1984, letter as clarified in accordance with Items 2, 3, 4, and 5 of the NRC's November 6, 1984, letter.



Thomas J. Kenyon, Project Manager  
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Enclosure:  
As stated

cc: See next page

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Enclosure (1)

WATTS BAR  
FIRE PROTECTION APPEAL MEETING  
NOVEMBER 14, 1984

<u>Name</u>	<u>Organization</u>
T. J. Kenyon	DL/LB #4
E. G. Adensam	DL/LB #4
R. M. Pierce	TVA - Project Manager - WBN
Don L. Williams	TVA - Office of Engineering - NEB
R. T. Wimbrow	TVA - Office of Engineering - MEB
J. A. Raulston	TVA - Office of Engineering - NEB
R. H. Shell	TVA - Nuclear Licensing Staff
R. E. Thompson	TVA - Risk Management
J. W. Hufham	TVA - Manager, Licensing
V. Benaroya	NRR/DE/CMEB
W. V. Johnston	NRR/DE
F. Rosa	NRR/DSI/ICSB
D. Kubicki	NRR/DE/CMEB
P. Madden	Region II
R. Ferguson	NRR/DE/CMEB
T. Wambach	NRR/DL/ORB #5
W. Long	NRR/DL/ORB #2
E. Sullivan	NRR/DE
Paulette Tremblay	DL/ORAB
Dick Clark	NRC/DL/ORB-2 BF
T. Novak	NRC/DL

Enclosure (2)

APPLICABLE NRC REQUIREMENTS

- o Determine the set of equipment and related cabling which must function to ensure the attainment of "hot" shutdown in the event of a fire.
- o Limit fire damage to only one of the redundant paths which serve the above functions.
- o Ensure that systems necessary for achieving "cold" shutdown are protected or can be repaired in 72 hours.
- o Separate equipment and related cables by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards.
- o Provide automatic fire detection and suppression systems in the fire areas having safe shutdown equipment and cables.

TVA IS PERFORMING A DETAILED EVALUATION OF WATTS BAR TO IDENTIFY ALL EQUIPMENT AND CABLES NECESSARY TO ACHIEVE HOT SHUTDOWN IN THE EVENT OF A FIRE.

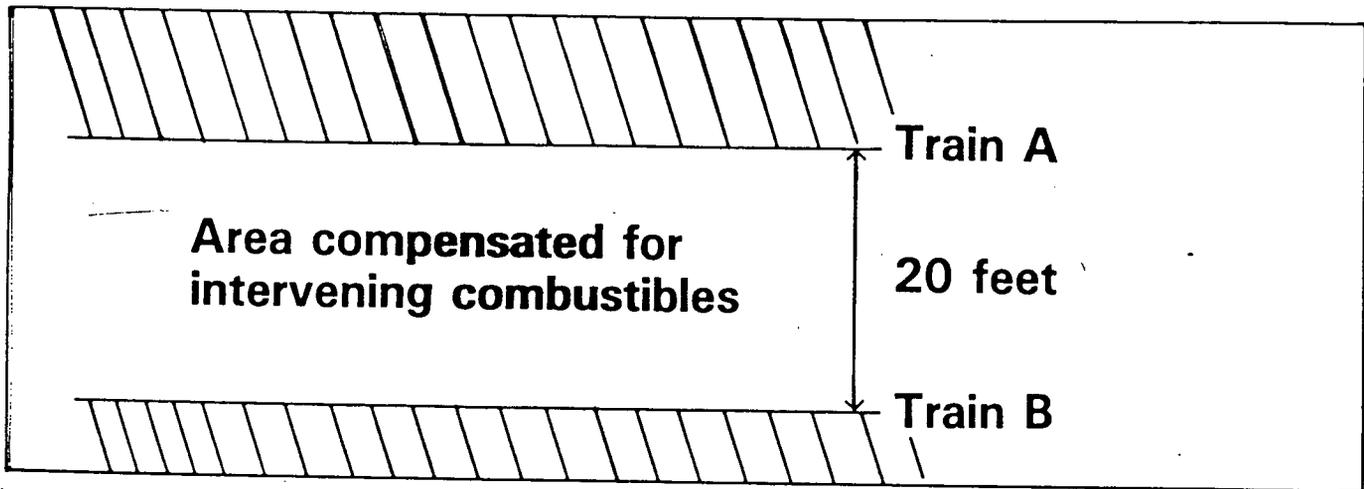
- o Developed detail logic diagram.
- o Identified specific equipment and cables necessary to achieve these functions.
- o Performing plant walkdowns to verify location of equipment and cables.
- o Selecting specific path to achieve desired functions.

TVA HAS PERFORMED A DETAILED EVALUATION OF WATTS BAR TO IDENTIFY AND ENSURE THE PROTECTION OR REPAIRABILITY, WITHIN 72 HOURS, OF EQUIPMENT NECESSARY TO ACHIEVE "COLD" SHUTDOWN.

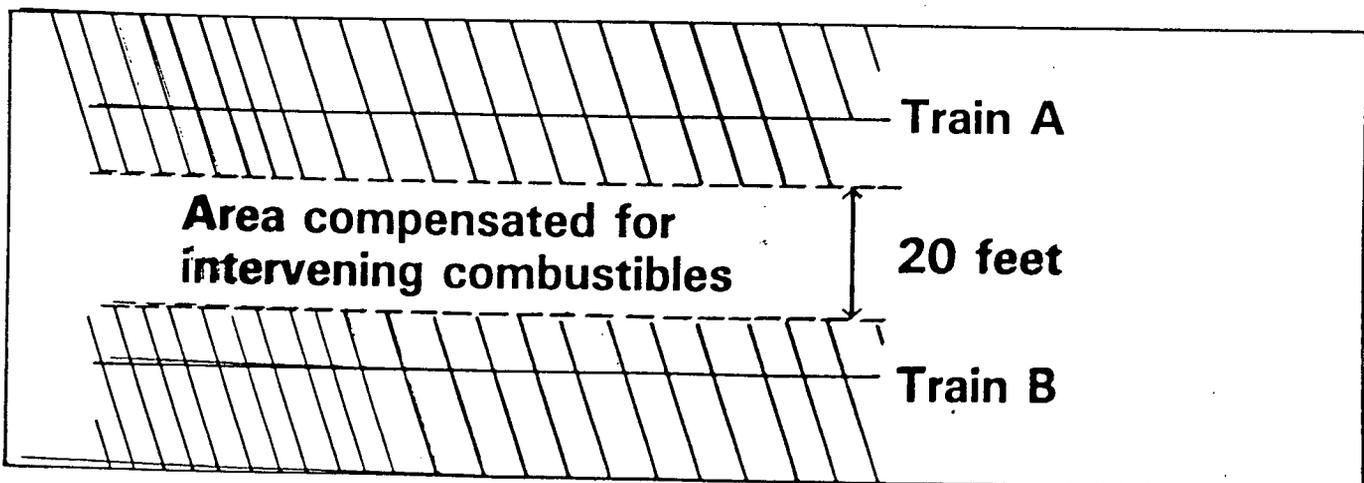
TVA HAS PROPOSED MODIFICATIONS WHICH, WHEN IMPLEMENTED, WILL COMPENSATE FOR INTERVENING COMBUSTIBLES.

- o Intervening combustibles are only defined between redundant paths of safe shutdown equipment and cabling.
- o TVA will ensure existing sprinkler heads produce fully developed spray patterns.
- o TVA will compensate with intermediate level sprinklers any sprinkler obstructions which are greater than 48 inches wide. Combined obstructions which overlap and have less than 4-inch flue space will be evaluated as a single obstruction.

**TVA HAS PROPOSED TO APPLY MODIFICATIONS TO COMPENSATE FOR INTERVENING COMBUSTIBLES TO A SINGLE AREA 20 FEET IN WIDTH BETWEEN REDUNDANT TRAINS OF SAFE SHUTDOWN EQUIPMENT AND RELATED CABLES.**



**OR**



TVA IS MAKING MODIFICATIONS TO ENHANCE THE COVERAGE OF  
OUR AREA SUPPRESSIONS SYSTEMS.

- o Ensure each sprinkler head produces a fully developed spray pattern.
  - o Where obstructions hinder development we will add or relocate heads.
  - o Cumulative effects of obstructions which prevent full spray pattern development will be evaluated as single obstructions.
- o Single obstructions greater than 48 inches wide and located below the spray pattern will be evaluated and compensated for.

THEREFORE  
WITH THESE MODIFICATIONS THE AREA SUPPRESSION SYSTEMS MEET  
OR EXCEED NFPA 13 REQUIREMENTS

TVA'S FIRE PROTECTION SYSTEM AT WATTS BAR IS ADEQUATE TO  
PROTECT ONE PATH OF SAFE SHUTDOWN EQUIPMENT.

- o TVA has carefully analyzed Watts Bar and defined all safe shutdown equipment and related cables necessary to achieve shutdown in the event of a fire.
- o With the modifications proposed, redundant paths of safe shutdown cables and equipment will have protection equivalent to a minimum of 20 feet of space clear of combustibles or fire hazards.
- o With the modifications proposed, our general area sprinkler system will be adequate and will meet or exceed NFPA 13 requirements.

THEREFORE,  
TVA'S FIRE PROTECTION SYSTEM AT WATTS BAR MEETS  
NRC REQUIREMENTS

November 27, 1984

MEETING SUMMARY DISTRIBUTION

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