June 13, 1983

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Docket Nos: 50-390
and 50-391

MEMORANDUM FOR: John A. Olshinski, Director
Division of Engineering and Technical Programs
Region II

FROM: Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: FIRE PROTECTION REQUIREMENTS FOR THE WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

By memoranda dated January 7 and January 10, 1983, you requested an evaluation be made of three unresolved inspection items. Enclosed is our response.

The January 7, 1983 memorandum concerned the following issue at Watts Bar:

1. Air Supervision of Pre-Action Sprinkler Systems

Your staff noted that the piping for pre-action type sprinkler systems is not supervised per the requirements of NFPA Standard No. 13 and issued a deviation. The applicant responded by letter dated December 3, 1982, that the piping is supervised via pressure switches downstream of the system control valves. Based on our evaluation, we concur with your staff that pressure switches do not constitute acceptable pipe supervision per NFPA 13.

The January 10, 1983 memorandum concerned the following issues:

1. Fire Protection for Vital Battery Rooms

Your staff noted that a manually actuated, dry pipe sprinkler system was provided for the vital battery rooms in lieu of an automatic pre-action system as committed by the licensee's fire hazard evaluation. The applicant responded by letter dated December 16, 1982, that the fire hazard evaluation was in error and that these documents were to be revised to conform to the systems actually being provided at Watts Bar. This change is significant. We are currently resolving several open items in the SER with the applicant. The resolution of the SER open items and the revisions to the fire hazard evaluation will be reflected in a SSER. Until that time, this item should remain open.

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2. Interior Fire Hose System

Your staff observed that the interior fire hose system for the auxiliary building was a NFPA Class II system in lieu of a Class III system. The applicant's response of December 16, 1982, noted that Section E.3(d) of the Fire Protection Evaluation stated that "additional" hose stations required as a result of the fire hazards evaluation will be designed for Class III service. Our evaluation of the standpipe system is contained in our SER. The system is in conformance with Section C.3.a of Appendix A to BTP ASB 9.5-1 and is, therefore, acceptable.

This evaluation was performed by NRR to assist NRC Region II in its evaluation of the above fire protection items. This letter completes our activity with regard to the issues on the pre-action sprinkler systems and interior fire hose system.

Original signed by
Robert A. Purple

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
As stated

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DATE	5/13/83	5/19/83	5/24/83	5/26/83	5/9/83		

Enclosure

Chemical Engineering Branch/Fire Protection Section

Fire Protection Issues - Watts Bar Nuclear Plants 1 & 2

Docket Nos. 50-390/391

1.0 Introduction

By memoranda dated January 7 and January 10, 1983, Region II requested that an evaluation be made of several unresolved inspection items.

The January 7, 1983 memorandum concerned:

1.1 Air Supervision of Pre-Action Sprinkler Systems

The January 10, 1983 memorandum concerned:

2.1 Fire Protection for Vital Battery Rooms

2.2 Interior Fire Hose System

1.1 Air Supervision of Pre-Action Sprinkler Systems

The applicant in the Watts Bar Fire Protection Program Evaluation of April 18, 1977, states that the automatic sprinkler systems will be in conformance to the requirements of NFPA Standard No. 13. Section 5-3.5.2 of NFPA 13 states that "sprinkler piping of pre-action systems containing more than 20 heads shall be automatically supervised." Region II observed that the pre-action systems for the cable spreading room and at elevation 755 ft. of the control building are not supervised.

By letter dated December 3, 1982 to Region II the applicant stated that the systems are supervised by pressure switches located downstream of the system control valves. The switches provide alarm annunication in the Main Control Room anytime a control valve opens.

A major concern with pre-action-type sprinkler systems is the integrity of piping. In conventional wet and dry pipe sprinkler systems, a pipe rupture would be apparent soon after it occurred, due to water leakage or loss of air pressure. Loss of pipe integrity on pre-action systems would in all likelihood be apparent only after the deluge valve tripped and water entered the system. This limitation is critical to the effectiveness of the system during a fire since a pipe break upstream from the fire would reduce/prevent water from being discharged onto it. In addition, undiscovered pipe cracks or breaks negate the protection against inadvertant actuations of the pre-action system. They have the potential to cause adverse impacts on water sensitive electronic components, due to water discharge if the deluge valve is inadvertantly opened. Consequently, effective supervision is necessary to discover the loss of pipe integrity at an early stage.

The applicant's use of pressure switches does not satisfy the pipe supervision requirements of NFPA 13 because these switches are designed to detect water flow and not loss of pipe integrity as required. Supervision via low air pressure maintained in the piping, with an appropriate low air pressure alarm, does conform to Section 5-3.5.2 of NFPA. This type of supervision has been utilized by the applicant for other pre-action systems in the plant.

2.1 Fire Protection for Vital Battery Rooms

The applicant in the Fire Protection Evaluation of April 18, 1977 states that the 125V vital battery rooms and vital battery board rooms in the auxiliary building will be provided with an automatic pre-action sprinkler system. Region II observed that, the rooms are equipped with a conventional wet-pipe sprinkler system.

By letter dated December 16, 1982, the applicant responded that the fire hazards evaluation was in error and that these documents were to be revised to conform to the systems actually being installed i.e. a manually actuated, dry pipe sprinkler system.

This change in the fire protection program is of a significant nature. We are currently reviewing the information in several open items in the SER. The protection of the vital battery rooms will be addressed concurrent with these issues and will be reflected in a revised SSER.

2.2 Interior Fire Hose System

Region II observed that the interior fire hose system for the auxiliary building was a NFPA Class II system (1½ inch hose) in lieu of a Class III system (capable of supplying both 2½ and 1½ inch hose). By letter dated December 16, 1982, the applicant noted that in Section E.3.(d) of the Fire Protection Evaluation he stated that "additional" hose stations required as a result of the fire hazards evaluation will be designed for Class III service.

Our evaluation of the Combination Class II and Class III standpipe system is in our SER. The evaluation was based on a review of the available information and the results of a site audit, conducted with our consultant. Based on our evaluation, we found that the standpipe system was in conformance with Section C.3.a of Appendix A to BTP ASB 9.5-1 and is, therefore, acceptable.

3.0 Conclusion

The following represents a summary of our conclusions:

1.1 Air Supervision of Pre-Action Sprinkler Systems

We concur with Region II that the applicant's use of pressure switches as supervision of pipe integrity does not comply with NFPA Standard No. 13 and represents an unacceptable deviation from prior commitments.

2.1 Fire Protection for Vital Battery Rooms

We will re-evaluate the fire protection for these rooms and report our conclusions in a supplemental safety evaluation.

2.2 Interior Fire Hose System

The interior fire hose system conforms with our fire protection guidelines, and therefore, we find it acceptable.