



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

FIRE PROTECTION SAFETY EVALUATION BY THE  
OFFICE OF NUCLEAR REACTOR REGULATION  
U.S. NUCLEAR REGULATORY COMMISSION  
IN THE MATTER OF  
METROPOLITAN EDISON COMPANY,  
JERSEY CENTRAL POWER AND LIGHT COMPANY,  
AND PENNSYLVANIA ELECTRIC COMPANY  
THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1  
DOCKET NO. 50-289  
SUPPLEMENT NO. 3

Introduction

By letters dated December 28, 1978, July 5, 1979, and August 27, 1979, Metropolitan Edison Company (Met Ed or the licensee), as required by the Fire Protection Safety Evaluation (FPSE) for Facility Operating License No. DPR-50 for the Three Mile Island Nuclear Station, Unit No. 1 (TMI-1), submitted results of their studies on open items and plant modifications. The specific items addressed in these studies are as follows:

- 3.1.10 Thermal Insulation of Valves
- 3.2.7 Alarm Circuit Supervision
- 3.2.8 Remote Shutdown Stations
- 3.2.10 Control Building HVAC Loss
- 3.2.11 Interior Hose Station Standpipes Less than Four Inch Diameter

Our evaluation of these studies as they impact on these items is complete and is the subject of this Supplemental Safety Evaluation.

Background

On September 19, 1978, the Commission issued Amendment No. 44 to the TMI-1 operating license. This amendment added a condition to the license which requires completion of the modifications and the completion of the incomplete items identified in paragraphs 3.1.1 through 3.1.23 and paragraphs 3.2.1 through 3.2.15 respectively, of the NRC's FPSE for TMI-1. Amendment No. 44 also requires that as the items and modifications are completed, the fire protection program will be addressed in regard to the completed items in supplements to the Safety Evaluation.

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Upon completion of specific items identified above, the licensee submitted to the NRC by letters dated December 28, 1978, July 5, 1979, and August 27, 1979, information necessary to assure that the requirements of Amendment No. 44 are met.

#### Evaluation

##### 3.1.10 THERMAL INSULATION OF VALVES

FPSE Section 3.1.10 indicates that thermal insulation will be installed on decay heat removal system valves in the reactor building. The purpose of this insulation is to protect the valves from a reactor coolant pump lubricating oil fire.

By letter of August 27, 1979, the licensee proposed to install lubricating oil splash shields on the reactor coolant pumps, contending that the installation of such shields would prevent a valve-disabling oil fire. The licensee further requested that the proposed modification of the decay heat valves in the reactor building be rescinded.

We agree with the licensee's contention that a valve disabling oil fire is not likely after the reactor coolant pump lube oil collection systems are installed. However, in view of the significance of these valves in providing reactor cooling, we requested further assurance on the operability of these valves. Subsequently, the licensee confirmed that at least one of these valves is accessible for and capable of manual operation. We, therefore, accept the licensee's proposal that insulating these valves is not required and the purpose of this item has been met by the licensee by the installation of an oil splash shield on the reactor coolant pump.

##### 3.2.7 ALARM CIRCUIT SUPERVISION

FPSE Section 3.2.7 indicates that the licensee will perform a study to ensure that the signal initiating and alarm circuits for all fire detection and suppression systems are supervised to detect circuit breaks, ground faults, and power supply failures, and to annunciate in the control room. Additional modification(s) will be proposed if the study determines the need for such.

By letter dated December 28, 1978, the licensee provided the results of such a study to confirm that the presently installed detection system circuits meet the requirements for Class B supervision as defined by NFPA 72D. The proposed detection system will be installed to meet the same supervision requirements. Additional modification is therefore unnecessary.

We accept the licensee's conclusion that additional modification to the signal initiating and alarm circuits of the fire detection and suppression systems is not required and the intent of this item has been met by the licensee.

### 3.2.8 REMOTE SHUTDOWN STATIONS

Section 3.2.8 of our FPSE indicates that the licensee will perform an analysis to determine whether a single fire at any location could cause loss of both local control and control from the control room of any safe shutdown system. If the analysis indicates such loss could occur, appropriate corrective modification will be provided.

The licensee's response of December 28, 1978, indicated that the results of such study revealed that the only location where a fire could simultaneously cause loss of local control and control from the control room of any safe shutdown system is the relay room, i.e., cable spreading room.

In regard to the relay room, the licensee committed to upgrade the unlabeled doors and the barrier penetration seals to a 3-hour fire barrier enclosing the room. Manual hose(s) will be provided to reach all points in the area effectively. The licensee will also provide a shutdown capability independent of cabling and equipment in this area. This will be addressed as part of the alternate shutdown capability (Item 3.1.21) in a separate document. Additional smoke detectors will be installed in this room.

We have concluded, based on the licensee's commitments, that no additional modifications other than those described above are necessary to achieve a safe plant shutdown in the event of a fire in the relay room. We further conclude that the intent of this item has been met by the licensee.

### 3.2.10 CONTROL BUILDING HEATING, VENTILATING AND AIR CONDITIONING (HVAC) LOSS

Our FPSE, Section 3.2.10, indicates that the licensee will provide a study of the possible effects of a fire in the area containing the control building HVAC equipment and propose corrective measures if a fire in the area could adversely affect the safe shutdown.

By letter dated December 28, 1978, the licensee provided the results of a study which indicated that the only major redundant components that could be simultaneously affected by a single fire are ventilation exhaust fans. A test was run with these fans out of service but with doors open, and it was determined that the control room temperature could reach 100°F.

The licensee and the architect-engineer concluded that additional modifications are not necessary since the equipment existing in the control building was procured with the requirement to be operational in an ambient room temperature ranging from 32° to 120°F. On this basis, we have concluded that the equipment in the control building is not expected to fail due to a potential fire with the ventilation fans out of service. We therefore agree with the licensee's conclusion that additional modifications are not necessary and adequate measures have been taken to assure that a fire in the area will not adversely affect the safe shutdown of the plant.

3.2.11 INTERIOR HOSE STATION STANDPIPES LESS THAN FOUR INCH DIAMETER

FPSE Section 3.2.11 indicates that the licensee will demonstrate, by test or calculation, that the subject standpipes are capable of delivering a water flow of at least 100 gpm at a residual pressure of at least 65 psig at the outlet of the hose station.

By letter dated July 5, 1979, the licensee indicated that calculations had been performed which confirmed the subject standpipes are capable of delivering 100 gpm at a residual pressure of at least 65 psig.

We accept the results of the licensee's calculation and conclude that an adequate water supply exists at the fire hose stations to extinguish a potential fire in the area.

Conclusion

Based on the above and the information submitted by the licensee, we conclude that open items and plant modifications identified in Amendment No. 44 as Items 3.1.10, 3.2.7, 3.2.8, 3.2.10, and 3.2.11 are adequate for meeting our requirements, and therefore these items are considered complete.

Dated: July 21, 1980