



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMENDMENT NO. 33 TO FACILITY OPERATING LICENSE NO. DPR-50

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER AND LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

Introduction

By letter dated October 28, 1977, Metropolitan Edison Company (the licensee) requested amendment of Appendix A to Facility Operating License No. DPR-50 for Three Mile Island Unit No. 1 (TMI-1). The proposed amendment would increase from 48 hours to 72 hours the period during which one of a group of redundant components in the emergency core cooling, reactor building emergency cooling or reactor building spray systems could be inoperable during power operation. The request supersedes a related request submitted by the licensee on September 6, 1977.

Background

Section 3.3.2 of the TMI-1 Technical Specifications presently states:

"Maintenance shall be allowed during power operation on any component(s) in the makeup and purification, decay heat, RB emergency cooling water, RB spray, CFT pressure instrumentation CFT level instrumentation, BWST level instrumentation, or cooling water systems which will not remove more than one train of each system from service. Components shall not be removed from service so that the affected system train is inoperable for more than 48 consecutive hours. If the system is not restored to meet the requirements of Specifications 3.3.1 within 48 hours, the reactor shall be placed in a cold shutdown condition within twelve hours."

In addition, Section 3.3.4 states:

"Prior to initiating maintenance on any of the components, the duplicate (redundant) component shall be tested to assure operability."

In contrast, however, the Bases section for these specifications states:

"An allowable maintenance period of up to 72 hours may be utilized if the operability of equipment redundant to that removed from service is demonstrated immediately prior to removal."

From the foregoing, it is seen that an inconsistency exists between the basis for the specification and the specification as actually written. That is, a 72 hour maintenance period is discussed in the basis, while the specification refers to a 48 hour maintenance period. The proposed amendment would remove this inconsistency by changing the maximum allowable maintenance period as stated in the specification to 72 hours.

Evaluation

The effect of the proposed revision would be to allow certain safety-related components having redundant counterparts to be out of service for periods of up to 72 consecutive hours rather than the present limit of 48 hours.

In order to determine if the proposed change involves a significant hazards consideration, the following questions must be addressed:

- (1) Would the proposed change involve a significant increase in the probability or consequences of an accident previously considered; and
- (2) Would the proposed change involve a significant decrease in a safety margin.

With respect to question 1 above, changing the maximum allowable out-of-service period from 48 hours to 72 hours does not affect the probability of occurrence of an accident previously considered or the seriousness of the resulting consequences. This is because it is an administrative change only, and therefore could not by itself cause an accident nor affect the ability of the mitigating systems to perform their functions in limiting the consequences of the accident.

With respect to question 2, however, the change would increase the length of time that a redundant component would not be available and therefore, would affect the safety margin. We have investigated generically the effect of out-of-service periods on system unavailability^{1/}. Factors included in the investigation were equipment failure rates, including single, double and common mode failures; maintenance outages; equipment testing outages and the interval between testing; and the need for certain equipment for different accident conditions. As a result of this investigation, we concluded that system unavailability was relatively insensitive to outages in the range of 40 to 100 hours. We, therefore, further concluded that 72 hours was an acceptable duration for out-of-service periods for the equipment and type of reactor which are the subject of this amendment request. This conclusion is reflected in the fact that licenses currently being issued by the Nuclear Regulatory Commission for reactors similar to TMI-1 specify an allowable out-of-service period of 72 hours for the type of equipment under consideration.

Based on the foregoing, we conclude that the proposed increase in the allowable out-of-service period from 48 hours to 72 hours does not constitute a significant decrease in safety margin, and does not constitute an undue hazard to the health and safety of the public.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

^{1/} "The Impact of Component Outages on ECCS Unavailability," R. T. Liner, J. T. Powers, and E. V. Lofgren, SAI-75-550-WA, August 1975, and Amendment, SAI-76-356-WA, May 1976.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 11, 1977