



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

SAFETY EVALUATION BY THE
DIRECTORATE OF LICENSING
SUPPORTING AMENDMENT NO. 1
TO LICENSE NO. DPR-50
(Change No. 1 to Appendix A
of Technical Specifications)

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

THREE MILE ISLAND NUCLEAR STATION - UNIT 1
DOCKET NO. 50-289

Introduction

By letter dated May 6, 1974, Metropolitan Edison Company requested a change to the Technical Specifications appended to Facility Operating License No. DPR-50 for the Three Mile Island Nuclear Station - Unit 1. The proposed change would temporarily permit plant warmup and low power (less than 5% of rated power) operation while one of the electric motor-driven emergency feedwater pumps is out of commission. The Technical Specifications, Appendix A, Section 3.4.3, presently require all three of the emergency feedwater pumps to be operable before the plant is heated to more than 250°F.

Discussion

The ability of the Emergency Feedwater System (EFW) to provide cooling water to the steam generators was considered during the safety evaluation of Three Mile Island Unit 1 (TMI-1). To reevaluate with respect to the proposed Technical Specification change there are two aspects to consider: (1) warmup without criticality, and (2) criticality and low power operation.

Warmup without criticality is clearly acceptable. The EFW pumps are specified or required to provide a means of removing decay heat. If the plant is warmed up by reactor coolant pump heat and has never been critical, there is no fission product decay heat. The hot plant could be allowed to stand with no cooling at all without any damage to the fuel. A sudden release of pressure while hot would release the stored energy, but again there would be no damage to the fuel. Therefore, a modification of the Technical Specification to allow warmup with one of the EFW pumps out of commission is acceptable.

To permit criticality and low power physics testing may be considered as permitting indefinite operation at 5% power. Limiting the power to 5% assures a reduction in decay heat to be removed of a factor of twenty.

The EFW system in TMI-1 was designed with a primary, 100% capacity, turbine-driven pump (EF-P1) and two backup, 50% capacity, motor-driven pumps (EF-P2A and EF-P2B). For a full power operating history, removal of all decay heat would require both motor-driven pumps to operate if the turbine-driven pump failed. However, a restriction to 5% power would mean the twenty-fold reduction of decay heat and only one motor-driven pump would suffice if it can acceptably serve both sides of the system. The EFW system is shown in Figure 10-2 of the Final Safety Analysis Report. The diagram shows all three EFW pumps feeding a common header. Each steam generator is served from that header; with the manifold valves EF-V2A and EF-V2B both normally open, either motor-driven EFW pump can feed either steam generator. Moreover, electrical power for starting the turbine-driven pump is drawn from both emergency busses so that the failure of either bus would not cause the simultaneous loss of the one motor-driven pump and the turbine-driven pump.

In view of the above, the EFW system can provide adequate cooling for decay heat removal with one of the motor-driven pumps not available if reactor power is not allowed to exceed 50% of rated power. Therefore the temporary change to Technical Specifications proposed by the applicant does not involve a significant hazards consideration and would not cause undue risk to the health and safety of the public.

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