



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 13 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 1

DOCKET NO. 50-289

INTRODUCTION

By letter dated January 16, 1976, as supplemented February 13, 1976, Metropolitan Edison Company (MetEd) made application to amend the Technical Specifications appended to Facility Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1 (TMI-1). MetEd proposed that the Technical Specifications be amended to increase the reactor coolant system (RCS) high pressure setpoint from 2355 psig to 2405 psig for a 24-hour period just prior to shutdown for refueling. MetEd is planning to conduct a loss of electric load test and desires to determine system response without a pressure induced trip.

DISCUSSION

MetEd is currently involved in a program to improve the capability of TMI-1 to withstand a loss of electrical load (LOEL) from 100% power without tripping the reactor. Ability to withstand a LOEL without reactor trip offers several advantages including improved reactor operating efficiency and less frequent reliance on and usage of the emergency sources of power.

In connection with this program MetEd desires to confirm their ability to predict system response and has proposed a test under controlled conditions to provide some data in support of their predicted system responses. MetEd has conducted a safety analysis to determine the impact of the pressure trip setting change and has determined that the setting change for the end of Cycle 1 condition would not reduce the safety margin from that approved in the Final Safety Analysis Report (FSAR).

EVALUATION

MetEd has provided supplementary safety analysis of the most limiting pressure excursions in support of their request for license amendment for the temporary (24-hour) pressure trip setpoint revision. Specific analysis has been submitted for the following reactor transients: startup accident, rod ejection accident, and the feedwater line break accident. Three other accidents were considered and determined to be less limiting. These pressure excursions included the following transients: rod withdrawal from rated power, moderator dilution, and loss of electric power.

We have reviewed the MetEd analysis and concur that the most limiting pressure excursions are the three accidents (startup accident, rod ejection accident, and feedwater line break accident) for which specific analyses are provided. The results of the MetEd analysis for these TMI-1 limiting transients indicate that the peak pressure resulting from the increased RCS pressure setpoint (2405 psig) at the end of Cycle 1 (EOC) is less than the peak pressure calculated at the beginning of Cycle 1 (BOC) with the existing RCS pressure setpoint (2355 psig). The EOC condition for calculations with the revised pressure trip setting was chosen for the analysis since MetEd proposes to do the test at the end of Cycle 1. Specific results from the TMI-1 analysis are as follows:

<u>Transient</u>	<u>Maximum Pressure (psia)</u>
Startup accident (BOC - present pressure trip setpoint)	2730
Startup accident (EOC - revised pressure trip setpoint)	2580
Ejected rod accident (BOC - present pressure trip setpoint)	2650
Ejected rod accident (EOC - revised pressure trip setpoint)	2530
Feedwater break accident (BOC - present pressure trip setpoint)	2638
Feedwater break accident (EOC - revised pressure trip setpoint)	2656

We concur with the results of the analysis and agree that the condition with the revised pressure trip setpoint at the end of cycle is within the

envelope established and bounded by the beginning of cycle calculations with the present pressure trip setpoint. This conclusion results from the fact that the parameters which impact primarily on the pressure transient analysis (doppler and moderator coefficients) are least conservative at BOC but become increasingly more conservative with exposure and become most conservative at EOC. Hence, BOC conditions are limiting in the reactor design. All of the values calculated above are well within the maximum pressure limit of 2750 psia with safety valve setpoint in all cases remaining constant at a setting of 2435 psig $\pm 1\%$. We therefore find the revised pressure setpoint (from 2355 psig to 2405 psig) setting for the single 24-hour test acceptable. Further, to provide protection in the event of slow transients for which operator actions are delayed, two conditions involving manual scrams have been added as additional precautionary measures. One involving the pressurizer level requires a reactor scram when the level exceeds 315 inches. This is a backup safety measure to prevent the gas space in the pressurizer from going below 50% of the pressurizer volume. This measure ensures that the safety valves will always be capable of emitting steam and remain within design conditions and not be subjected to water discharge which would alter safety valve discharge characteristics. In a similar manner, reactor scram is required when the drain tank pressure exceeds 15 psig. Normal drain tank pressure is about 1 psig and any noticeable pressure above that indicates steam is being discharged from the safety valves. When the safety valves release sufficient steam quantities to raise the pressure to the 15 psig value the reactor will be scrammed immediately. This action would tend to reduce additional heat generation and reduce RCS pressure.

We conclude that the two conditions involving manual scrams described above provide additional operating conservatism which give increased confidence that the revised pressure setpoint setting for the single 24-hour test is acceptable.

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 statement, negative declaration, or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the change 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 change 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:

February 19, 1976