



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 46 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 March 13, 1978, Metropolitan Edison Company (Met Ed) requested amendment of Facility Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit No. 1 (TMI-1). The requested change would increase the frequency of performing a calibration check of the out-of-core nuclear instrumentation.

Background

Nuclear instruments which are sensitive to the rate of the nuclear fission process are used to provide an electrical signal proportional to reactor power level. This electrical signal is also used in the reactor protection system to initiate shutdown of the reactor when excessive power levels are generated. The electrical signal accurately reflects reactor power level, however, only when it is calibrated against an actual thermal measurement of reactor power (referred to as a heat balance measurement).

At the present time the TMI-1 Technical Specifications require that a heat balance check be performed at least twice a week when the reactor is above 15% power and in steady state operation, or daily during non-steady state operation. The specifications also require that the calibration of the nuclear instrumentation (specifically, the power range amplifiers) be corrected whenever the indicated power (from the nuclear instrumentation) and the actual reactor thermal power, as determined by a heat balance check, differ by more than 2%.

The present request would increase the frequency of performing these checks to once per shift. This request is based on information Met Ed received from the reactor vendor, Babcock & Wilcox, to the effect that during certain power transients, the difference between the reactor power indicated by the nuclear instrumentation and that calculated from a heat balance may exceed 4% of full power, which is

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the instrument calibration error assumed in the accident analyses contained in the facility Final Safety Analysis Report.

### Evaluation

A detailed evaluation of this matter has not yet been completed by the NRC staff. For example, it is not known if the increased frequency for performing heat balance checks is fully adequate, or if other compensatory measures are also needed. Based on previous operating experience at TMI-1, however, and in the context of the procedures in use at other pressurized water reactors,\* we conclude that the increased frequency for performing heat balance checks as proposed by Met Ed is a prudent measure to adopt pending completion of our review of this matter and that the facility Technical Specifications should be so amended, at least as an interim measure. In the meantime, we shall continue our review. Should our review indicate that the present measures are not fully adequate, we shall so advise Met Ed and initiate steps to implement the necessary modifications. Upon completion of our review, we shall issue a supplement to this Safety Evaluation and amend the facility Technical Specifications as needed.

### 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 issuance of this amendment.

### 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.

Date:

\* Heat balance checks are typically required to be performed at least daily at PWR facilities licensed to operate with the Commission's Standard Technical Specifications.