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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 62 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 April 28, 1977 (GQL 0554, TSCR 53), Metropolitan Edison Company (the licensee) requested five changes to the Three Mile Island Nuclear Station, Unit No. 1 (TMI-1) Technical Specifications (TS).

These changes address the administrative requirements concerning reviews of procedures, equipment or system changes (TSCR 53.1), the frequency of successive power mapping (TSCR 53.2), the nomenclature describing the analysis of radioactive contamination of the secondary coolant (TSCR 53.3), the reporting requirements for the ring girder surveillance inspection (TSCR 53.4) and the status of the shutdown bypass switch associated with each reactor protection channel during power operation (TSCR 53.5).

This Safety Evaluation Report addresses Met Ed's requests on the nomenclature describing the analysis of radioactive contamination of secondary coolant (TSCR 53.3) and the status of the shutdown bypass switch associated with each reactor protection channel (TSCR 53.5). This report does not address three of the requests in Met Ed's submittal for the following reasons:

1. Administrative requirements concerned with reviews of procedures (53.1).

This request is being addressed as part of the general revision to the Administrative Section 5 of the TS. The general revision of Section 6 is necessary as the result of the formation of General Public Utilities Nuclear Group (GPUNG) (Note Amendment No. 93).

2. Frequency of successive power mapping (53.2).

This request permits an increase in the intervals between successive power mappings from 10 EFPD to 30 EFPD. The TS has been addressed as part of Amendment No. 29 (letter dated April 22, 1977) and there is no need to address this matter as part of this evaluation.

3. Reporting requirements for the ring girder surveillance inspection (53.4).

This matter had been addressed as part of Amendment No. 59 (letter dated October 31, 1980) and there is no need to reconsider the reporting requirement as part of this evaluation.

Discussion and Evaluation

I. Nomenclature Describing the Analysis of Radioactive Contamination -Secondary Coolant (TSCR 53.3).

The proposed TS change request (TSCR 53.3) amends the type of radiochemical analysis used in measuring secondary system coolant radioactivity. Presently, TMI-1 incorporates a "15 minute gross degassed β-γ" analysis for secondary coolant radioactivity which requires sample collection, preparation and analysis be completed in approximately 15 minutes. Because of both logistics and analytical sensitivity, the licensee is requesting that a "gross activity" measurement be incorporated for future secondary coolant activity measurement.

The proposed change pertains specifically to the analytical method used in measuring radioactivity in the secondary system. The standardized TSs require a "gross activity" measurement for determining the presence of a primary to secondary (steam generator) leak. The licensee's TS requires a low level of detectability (LLD) of 2×10^{-8} μCi/cc. Because of the state-of-the-art in analytical hardware this specification will require both sample pre-concentration and longer count times to attain analytical detection at the LLD limit. Therefore, a functional need exists for the proposed TS change because it is difficult with present state-of-the-art technology to perform this analysis at this LLD limit within a 15 minute period.

Since neither the TS for secondary coolant activity (I^{131} - 1.0 μCi/cc) nor the frequency of analysis is changed, the intent of early detection of steam generator leakage remains intact. In regard to effluent TSs, there is no associated impact with the proposed secondary coolant radiochemical analysis change. On this bases, we conlclude that the level of safety is not reduced and therefore, changing the 15 minute gross degassed β-γ to gross activity is acceptable.

II. Status of the Shutdown Bypass Switch Associated with each Protection Channel (TSCR 53.5)

The proposed TS change (TSCR 53.5) requests a change to the wording of TS 3.5.1.4 from: "The key operated shutdown bypass switch associated with each reactor protection channel shall not be used during reactor power operation", to: "The key operated shutdown bypass switch associated with each reactor protection channel shall not be used during reactor power operation except for required maintenance or testing".

The proposed change consists of adding the phrase "Except for required maintenance or testing" to the end of the specification. This proposed change

allows the shutdown bypass switch associated with each reactor protection channel to be placed in a bypass position during reactor power operation for testing and maintenance purposes.

Each reactor protection channel is provided with two key-operated bypass switches, consisting of a channel (manual) bypass switch and a shutdown bypass switch.

The channel bypass switch enables a protection channel to be bypassed taking the protection channel out of service for testing and maintenance purposes. Actuation of this switch initiates a visual alarm on the main console which remains in effect so long as the channel is bypassed. During testing the system operates in 2-out-of-3 coincidence. The channel bypass switches for redundant protection channels are wired such that if one bypass switch is placed in the bypass position, then placing any other redundant channel in the bypass mode will have no effect. Thus by design, two or more protection channels cannot be bypassed simultaneously by the accidental actuation of more than one channel bypass switch. It should be noted, that when a protection channel is bypassed by the channel bypass switch, all safety signals that normally pass through the protection channel are blocked.

The shutdown bypass switch enables the power imbalance flow, power-pump, low pressure, and pressure-temperature trips to be bypassed when bringing the plant up or down in pressure, and allows control rod drive tests to be performed after the reactor has been shutdown and depressurized below the low reactor coolant pressure trip point. An additional bistable is employed in the shutdown bypass circuits for each reactor protection channel to trip the channel if the reactor coolant pressure exceeds 1,720 psig when the shutdown bypass switch in a protection channel is in the "bypass" position.

Item 8 in TS Table 4.1-1, requires a monthly test of the reactor coolant high pressure bistable to verify it operates as designed. In order to perform the test, the channel shutdown bypass switch must be placed in the bypass position to verify that a trip signal from the shutdown bypass bistable will trip the channel. The proposed change eliminates a conflict existing between two requirements in the TS, that is, Item 8 in Table 4.1-1 and TS Item 3.5.1.4 which requires the shutdown bypass switch not be placed in the bypass position during power operation. The proposed change will in no way reduce the level of safety because of redundancy of the channels that cannot be bypassed while a single bypass shutdown switch is actuated. In addition, the protection channel under test is placed in the bypass mode by the actuation of both the channel bypass switch and the shutdown bypass switch. The proposed change will permit testing and or any required maintenance of the reactor protection channel shutdown bypass bistables to ensure their proper operation without any potential ambiguity.

On this basis, we conclude that the change to the TSs allowing the use of the shutdown bypass switch during maintenance or testing to assure proper operation of the reactor protection channel shutdown bypass bistables is acceptable.

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.

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: February 11, 1981