METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY

AND

PENNSYLVANIA ELECTRIC COMPANY

THREE MILE ISLAND NUCLEAR STATION UNIT 1

Operating License No. DPR-50
Docket No. 50-289
Technical Specification Change Request No. 41

This Technical Specification Change Request is submitted in support of Licensee's request to change Appendix A to Operating License No. DPR-50 for Three Mile Island Nuclear Station Unit 1. As a part of this request, proposed replacement pages for Appendix A are also included.

METROPOLITAN EDISON COMPANY

By /s/ R. C. Arnold
Vice President-Generation

Sworn and subscribed to me this 29th day of October, 1976.

/s/ L. L. Lawyer
Notary Public

Metropolitan Edison Company (Met-Ed)
Three Mile Island Nuclear Station Unit I (TMI-1)
Docket No. 50-289
Operating License No. DPR-50

Technical Specification Change Request No. 41

The Licensee requests that the attached section 3.17 be added and page 4-10 replace the corresponding existing Technical Specification page.

Reasons for Proposed Change

To prevent steam generator tube degradation by controlling contamination of the steam generator secondary coolant.

Safety Analysis Justifying Proposed Change

This change request imposes more restrictive limits on the steam generator secondary coolant. Therefore, no unreviewed safety question is involved.

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3.17 SECONDARY WATER CHEMISTRY

Applicability

Applies to secondary system water chemistry during hot standby, startup, and power operation.

Objective

To prevent steam generator tube degradation by controlling contamination of the steam generator secondary coolant.

Specification

(Refer to Table 3.17-1)

3.17.1 With the total cation conductivity of the final feedwater to any steam generator exceeding its steady state limit but within its transient limit, restore the conductivity to within its steady state limit within 24 hours; or, be in hot shutdown within the next 12 hours.

3.17.2 With the total cation conductivity of the final feedwater to any steam generator exceeding its transient limit, initiate action immediately to restore the conductivity to within its steady state limit within 4 hours; or, be in hot shutdown within the next 12 hours.

3.17.3 With the pH of the final feedwater to any steam generator exceeding its steady state limits but within its transient limits; restore the pH to its steady state limits within 24 hours; or, be in hot shutdown within the next 12 hours.

3.17.4 With the pH of the final feedwater to any steam generator exceeding its transient limits, initiate action immediately to restore the pH to its steady state limits within 4 hours; or, be in hot shutdown within the next 12 hours.

Bases

Contamination of the steam generator secondary coolant may cause tube degradation and impair tube integrity. Generally, the most severe contamination results from condenser inleakage of caustic forming impurities that may accumulate on the secondary side of the steam generator, or on the high heat flux surfaces of the steam generator tubes and can lead to the potential for intergranular stress corrosion cracking.

Monitoring of the condenser condensate by cation conductivity is an effective means of detecting condenser tube inleakage. The leakage rate can then be determined by comparing the anion concentration in the condensate with the anion concentration in the condenser cooling water. The cation conductivity of the steam generator final feedwater will indicate how effectively the condensate polishing units are removing contaminants and can indicate need for polisher regeneration. Since full flow condensate polishing is employed, no limit is assigned to the condenser condensate. Monitoring of this parameter will identify condenser tube leakage. Monitoring the total solids in the final feedwater is not accurate at the low levels that exist in once through steam generators operated with volatile treatment schemes. Cation conductivity is a more sensitive means of determining the concentrations of contaminants at these low levels.

In addition, known corrosive and scaling contaminants can be monitored during periods of increased cation conductivity in order to determine the extent of condenser leakage and steam generator contamination.

Controlling the secondary water chemistry within the specified limits will control the potential accumulation of corrosive impurities in the steam generator and minimize tube degradation. These limits provide reasonable assurance that the conditions in the steam generator will minimize the potential for tube degradation during all conditions of operation. and postulated accidents. These measures ensure the continued protection of the steam generator tubing which is an essential part of the reactor coolant pressure boundary.

The terms "Steady State" and "Transient", as used in this section, apply to chemistry parameters rather than to plant operating conditions.

TABLE 3.17-1

Total Cation Conductivity (μmho/cm) at 25°C	Final Feedwater
Steady State Limit	< 0.5
Transient Limit	< 1.0
pH at 25°C	
Steady State Limit	$9.2 \leq pH \leq 9.6$
Transient Limit	$9.0 \leq pH \leq 9.8$

TABLE 4.1-3 (Continued)

	Item	Check	Frequency
11.	Sodium Thiosulphate Tank	Concentration	Quarterly and after each makeup
12.	Condenser Partition Factor	I^{131} Partition Factor	Once if primary/ secondary leakage developes, i.e.: Gross Beta-Gamma on secondary side of OTSG is greater than 2×10^{-8} micro curies per cc and evidence of fission products is present
13.	Final Feedwater	a. Cation Conductivity	Continuous monitor once per 24 hour period if monitor is not operable. (4)
		b. pH	Continuous monitor once per 24 hour period of monitor is not operable.(4)

(1) When radioactivity level is greater than 10 percent of the limits of Specification 3.1.4, the sampling frequency shall be increased to a minimum of 5 times per week.

(2) $\bar{E}$ determination will be started when the 15 minute gross degassed beta-gamma activity analysis indicates greater than 10 µCi/ml and will be redetermined each 10 µCi/ml increase in the 15 minute gross degassed beta-gamma activity analysis. A radio chemical analysis for this purpose shall consist of a quantitative measurement of 95 percent of radionuclides in reactor coolant with half lives of >30 minutes.

(3) When the 15 minute gross degassed activity increases by a factor of two above background, an iodine analysis will be made and performed thereafter when the 15 minute gross degassed beta-gamma activity increases by 10 percent.

(4) Not required with the reactor sub-critical.