UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NO. DPR-50

METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER & LIGHT COMPANY

GPU NUCLEAR CORPORATION

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

1.0 INTRODUCTION

On September 12, 1995, the U.S. Nuclear Regulatory Commission (NRC) approved issuance of a revision to 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" which was subsequently published in the Federal Register on September 26, 1995, and became effective on October 26, 1995. The NRC added Option B "Performance-Based Requirements" to allow licensees to voluntarily replace the prescriptive testing requirements of 10 CFR Part 50, Appendix J, with testing requirements based on both overall leakage rate performance and the performance of individual components.

By application dated June 28, 1996, as supplemented March 11, 1997, GPU Nuclear Corporation, the licensee, requested changes to the Technical Specifications (TS) for Three Mile Island, Unit 1. The proposed changes would permit implementation of 10 CFR Part 50, Appendix J, Option B. The licensee has established a "Reactor Building Leakage Rate Testing Program" and proposed adding this program to the TS. The program references Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Test Program," dated September 1995, which specifies a method acceptable to the NRC for complying with Option B.

The March 11, 1997, letter provided clarifying information that did not change the scope of the June 28, 1996, submittal and the proposed no significant hazards consideration.

2.0 BACKGROUND

Compliance with 10 CFR Part 50, Appendix J, provides assurance that the primary containment, including those systems and components which penetrate the primary containment, do not exceed the allowable leakage rate specified in the TS and Bases. The allowable leakage rate is determined so that the leakage assumed in the safety analyses is not exceeded.

On February 4, 1992, the NRC published a notice in the Federal Register (57 FR 4166) discussing a planned initiative to begin eliminating requirements marginal to safety which impose a significant regulatory burden. Appendix J of 10 CFR Part 50 was considered for this initiative and the staff undertook a study of possible changes to this regulation. The study examined the previous performance history of domestic containments and examined the effect on risk of a revision to the requirements of Appendix J. The results of this study are reported in NUREG-1493, "Performance-Based Leak-Test Program."

Based on the results of this study, the staff developed a performance-based approach to containment leakage rate testing. On September 12, 1995, the NRC approved issuance of this revision to 10 CFR Part 50, Appendix J, which was subsequently published in the Federal Register on September 26, 1995, and became effective on October 26, 1995. The revision added Option B "Performance-Based Requirements" to Appendix J to allow licensees to voluntarily replace the prescriptive testing requirements of Appendix J with testing requirements based on both overall and individual component leakage rate performance.

RG 1.163, dated September 1995, was developed as a method acceptable to the NRC staff for implementing Option B. This regulatory guide states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J" provides methods acceptable to the NRC staff for complying with Option B with four exceptions which are described therein.

Option B requires that the RG or other implementation document used by a licensee to develop a performance-based leakage rate testing program must be included, by general reference, in the plant TS. The licensee has referenced RG 1.163 in the Three Mile Island Unit 1 TS.

RG 1.163 specifies an extension in Type A test frequency to at least one test in 10 years based upon two consecutive successful tests. Type B tests may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests and Type C tests may be extended up to 5 years based on two consecutive successful tests.

By letter dated October 20, 1995, NEI proposed TS to implement Option B. After some discussion, the staff and NEI agreed on final TS which were attached to a letter from C. Grimes (NRC) to D. Modeen (NEI) dated November 2, 1995. These TS are to serve as a model for licensees to develop plant-specific TS in preparing amendment requests to implement Option B.

For a licensee to determine the performance of each component, factors that are indicative of or affect performance, such as an administrative leakage limit, must be established. The administrative limit is selected to be indicative of the potential onset of component degradation. Although these limits are subject to NRC inspection to assure that they are selected in a reasonable manner, they are not TS requirements. Failure to meet an administrative limit requires the licensee to return to the minimum value of the test interval.

Option B requires that the licensee maintain records to show that the criteria for Type A, B and C tests have been met. In addition, the licensee must maintain comparisons of the performance of the overall containment system and the individual components to show that the test intervals are adequate. These records are subject to NRC inspection.

3.0 EVALUATION

The licensee's June 28, 1996, letter to the NRC proposes to establish a "Reactor Building Leakage Rate Testing Program" and proposes to add this program to the TS . The program references RG 1.163, which specifies a method acceptable to the NRC for complying with Option B. This requires revising existing TS sections 3.6.8.2, 3.6.10, 3.6.12, 4.4.1.1, 4.4.1.1.4, 4.4.1.2, and 4.4.1.2.5, and relocating applicable information from TS sections 4.4.1.1.1, 4.4.1.1.2, 4.4.1.1.3, 4.4.1.1.5, 4.4.1.1.6, 4.4.1.1.7, 4.4.1.2.1, 4.4.1.2.2, 4.4.1.2.3, 4.4.1.2.4, 4.4.1.3, 4.4.1.4, 4.4.1.5, and 4.4.1.7 to a new TS section 6.8.5 which requires a Reactor Building Leakage Rate Testing Program. Section 4.4.1.3 was deleted. This section is redundant to 10 CFR 50.55a(f) and TS 4.2.2. Corresponding Bases were also modified.

Option B permits a licensee to choose Type A; or Type B and C; or Type A, B and C; testing to be done on a performance basis. The licensee has elected to perform Type A, B and C testing on a performance basis.

The TS changes proposed by the licensee to adopt 10 CFR 50, Appendix J, Option B are in compliance with the requirements of Option B and consistent with the guidance of RG 1.163, and the generic TS of the November 2, 1995 letter, and are, therefore, acceptable to the staff.

The licensee has also proposed to modify the TS for the 48-inch reactor building purge valves by requiring leakage rate testing in accordance with the Reactor Building Leakage Rate Testing Program. This changes the leakage rate test frequency from every 3 months to 30 months.

As a result of reports of unsatisfactory performance of resilient seals in butterfly-type isolation valves, such as containment purge valves, due to seal deterioration, the NRC established Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" to study this issue and propose a regulatory resolution of the problem. IE Circular 77-11 "Leakage of Containment Isolation Valves With Resilient Seals" was issued and the final resolution imposed augmented leakage rate testing requirements which required more frequent testing than Appendix J for containment purge and vent line isolation valves that used resilient seal materials. The TMI TS contain these augmented testing frequency requirements at a frequency of every 3 months.

The licensee was requested to demonstrate good leakage rate performance over an extended period of time for these valves. The licensee responded by letter dated March 11, 1997, providing TMI-1 containment purge valve test results from 1986 to the present. The staff has reviewed these data and concludes that the data justify a change to a leakage rate test frequency of every 30 months.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendment. The State official had no comment.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (61 FR 40019). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 55.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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