



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 175 TO FACILITY OPERATING LICENSE NO. DPR-39  
AND AMENDMENT NO. 162 TO FACILITY OPERATING LICENSE NO. DPR-48  
COMMONWEALTH EDISON COMPANY  
ZION NUCLEAR POWER STATION, UNITS 1 AND 2  
DOCKET NOS. 50-295 AND 50-304

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 August 29, 1996, as supplemented on September 20, 1996, and October 4, 1996, Commonwealth Edison Company (ComEd, the licensee) requested changes to the Technical Specifications (TS) for Zion Nuclear Power Station, Units 1 and 2. The proposed changes would permit implementation of 10 CFR Part 50, Appendix J, Option B. The licensee has established a "Containment Leakage Rate Testing Program" and proposed adding this program to the TS. The program references Regulatory Guide (RG) 1.163, "Performance-Based Containment Leakage Test Program," dated September 1995, which provides specific guidance for leakage rate test methods, procedures, and analyses acceptable to the NRC for complying with the requirements and criteria in Option B.

The licensee's supplemental submittal of October 4, 1996, clarified and provided additional information in support of the initial application for amendment. It did not affect the Commission's initial proposed finding of no significant hazards consideration determination.

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. A maximum allowable leakage rate (La) is determined so that the leakage assumed in the safety analyses is not exceeded. Appendix J

classifies as "Type A" those tests that are performed to measure the containment system overall integrated leakage rate; "Type B" refers to pneumatic tests to detect and measure local leakage rates across pressure retaining, leakage limiting boundaries; and "Type C" refers to pneumatic tests to measure containment isolation valve leakage rates. Further definition of terms used herein may be found in Appendix J.

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."

From the results of this study, the NRC staff developed a performance-based approach to containment leakage rate testing. On September 12, 1995, the NRC approved this revision to 10 CFR Part 50, Appendix J, and it was subsequently published in the Federal Register on September 26, 1995 (60 FR 49495), 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, was developed as a method acceptable to the NRC staff for implementing Option B. This RG 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 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. In its application for amendment, the licensee references RG 1.163 in the proposed TS for Zion Nuclear Power Station, Units 1 and 2.

RG 1.163 specifies a decrease in Type A test frequency to at least one test in 10 years based upon two consecutive successful tests. Type B tests may also be extended to a maximum interval of 10 years based upon completion of two consecutive successful tests. Type C tests may be extended 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.

To determine the performance of each component, a licensee must establish factors that are indicative of or affect performance, such as an administrative leakage limit. 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

In its application dated August 29, 1996, as supplemented on September 20, 1996, and October 4, 1996, the licensee proposed to establish a "Containment Leakage Rate Testing Program" and proposed to add this program to the TS Administrative Controls requirements as new TS section 6.10. The program references RG 1.163, which specifies a method acceptable to the NRC for complying with Option B. This change also requires associated changes to Limiting Condition for Operation (LCO) 3.10.1 and Surveillance Requirement (SR) 4.10.1, "Containment Leakage Rate Testing"; LCO 3.10.2 and SR 4.10.2, "Containment Air Locks"; and the addition of the "Containment Leakage Rate Testing Program" to Section 6.10. Changes to corresponding TS Bases were also proposed.

The licensee also proposes to delete a footnote on page 214 since the refueling outage to which it applies is complete and, therefore, it is no longer applicable. This change is administrative in nature and is acceptable.

Under Option B, a licensee may choose the performance-based option for performing (1) Type A tests, (2) Type B and C tests, or (3) Type A, B and C tests. The licensee has elected to perform Type A, B and C testing on a performance basis for Zion Nuclear Power Station, Units 1 and 2.

The NRC staff finds the TS changes proposed by the licensee to be in compliance with the requirements of Option B and consistent with the guidance of RG 1.163 and the model TS of November 2, 1995, with the exceptions discussed below.

The licensee proposed an exception to the guidelines of RG 1.163. The exception only applies to Penetration P-16 of Unit 1, and allows section 10.2.1 of NEI 94-01 to be nonapplicable to Penetration P-16 of Unit 1 until the completion of Unit 1 refueling outage Z1R15. The exception allows the licensee to operate until the next Unit 1 refueling outage, currently scheduled to start in March 1997. The exception lasts until the completion of the refueling outage, currently scheduled for late May or early June 1997.

The exception will be of limited duration (seven to eight months) between the time that Option B is approved and Unit 1 refueling outage Z1R15. It allows the licensee to not test compression fittings on five tubing lines that are part of the Reactor Vessel Leak Detection system which pass through P-16. In its letter dated December 28, 1995, the staff approved the licensee's request to test P-16 only during Type A tests, which are conducted three times in a ten year service period. However, the staff specified that if the licensee implemented Option B, the exemption would be revoked and the issue would need to be reexamined under the requirements of Option B. The next Type A test under Option A would not be due until Z1R15. Therefore, by the exemption previously granted in the staff's December 28, 1995, letter, the test of P-16 would not be due until Z1R15 and the duration of this exception is the same as that of the previously granted exemption. The exception is only required until the end of Z1R15 because during that refueling outage, the licensee intends to decommission that part of the Reactor Vessel Leak Detection System and close and deactivate the containment isolation valves for P-16. The staff has reviewed the licensee's request and has determined that the exception will not present any significant risk to public health and safety because it is of limited duration (7 to 8 months) and there has never been a Type A leak rate test failure at Zion attributable to a compression fitting on these lines. The exception to RG 1.163 is, therefore, acceptable.

The licensee had requested a second exception to permit the elapsed time between the first and last tests in a series of consecutive satisfactory Type A tests to be 18 months instead of the 24 months required by NEI 94-01. However, in its supplemental submittal dated October 4, 1996, the request for this exception was withdrawn.

Based upon compliance with the requirements of Option B, the guidance of RG 1.163, and the model TS of November 2, 1995, the NRC staff finds the proposed changes to be acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve 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 the amendments involve no significant hazards consideration, and there has been no public comment on such finding (61 FR 52964). Accordingly, the amendments meet the eligibility criteria for

categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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