



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROCEDURE FOR CONTINUATION OF CONTAINMENT INTEGRATED

LEAKAGE RATE TEST WITH EXCESSIVE LEAKAGE

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-261

1.0 INTRODUCTION

By letter dated June 30, 1983, as clarified by letter dated September 14, 1987, Carolina Power & Light Company (licensee) requested a partial exemption from Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." The exemption requests a waiver of the Appendix J, III.A.1(a) requirement to stop the Type A test (Containment Integrated Leakage Rate Test or CILRT) if excessive leakage is determined and instead proposes an alternative which would allow the satisfactory completion of the Type A test. The exemption also requests that the acceptance criterion for "as found" Type A tests be set at the same value as the maximum allowable leakage rate, L_a or the corresponding L_t .*

2.0 EVALUATION

Appendix J, Section III.A.1(a), in part, requires that if during a Type A test potentially excessive leakage paths are identified which will interfere with satisfactory completion of the test, the Type A test shall be terminated and local leakage testing performed on the paths of concern. Repairs and/or adjustments shall be made to affected equipment and a Type A test performed. The staff has, in the past, concluded that acceptable means exist for satisfactory completion of Type A tests when excessive leakage is discovered without terminating the Type A test.

The objective of Appendix J Type A testing is to determine both the "as found" containment leakage condition and the final "as left" condition, if repairs are made. First, a satisfactory completion of a Type A test is essentially to ensure that actual leakage rates ("as left") do not exceed those rates assumed by accident analyses. Second, the "as found" condition of containment must be measured to obtain an indication of the ability of the containment to remain leaktight throughout the period between tests and for the purpose of determining subsequent testing frequency.

* L_a and L_t defined in 10 CFR Part 50 Appendix J, Sections II.K and II.M., respectively.

The licensee's proposal describes the approach it intends to follow to ensure the technical adequacy of Type A testing. Specifically, when excessive leakage is experienced during a Type A test, significant leaks will be identified and isolated from the test. Penetrations so isolated will be capable of local leakage rate testing. Once these leaks have been isolated, the Type A test will be continued. Following the Type A test, local leakage rates will be measured before and after repairs to each isolated leakage path. The results of the Type A test will then be back-corrected using the "minimum pathway" leakage rate for each penetration. The local leakage measurements before the repair are added to the Type A results to determine the "as found" condition and possible "as found" Type A test failure, which could increase future Type A test frequency as required by Section III.A.6 to Appendix J. The after-repair measurements (the Type A test measurement plus the "as left" local leakage rates) determine the final acceptability of the test. For a satisfactory Type A test, the corrected Type A results (the sum of the appropriate local leakages and the Type A test results) must be less than 75% of the maximum allowable leakage rate (L_a or L_t , as appropriate).

The licensee has proposed to use L_a or L_t as the acceptance criterion for the corrected "as found" Type A test results. L_a is the actual leakage rate used in the plant safety analysis to determine the offsite radiological consequences of an accident. The "as left" test limit of $0.75 L_a$ was specified in Appendix J in order to provide a margin of $0.25 L_a$ for possible deterioration of the containment leak-tightness between Type A tests. Since L_a is the actual number assumed in the offsite dose analysis, and the "as found" test measures leakage rate at the end of the period between tests so that margin for deterioration is no longer needed, it is technically acceptable to use L_a as the "as found" Type A test acceptance criterion. Specifically, the Technical Specification (TS) acceptance criterion (TS 4.4.1.1f(3)) remains that the allowable operational leakage rate which shall be met "before placing the containment into service prior to resumption of power operation following a test" shall be less than $0.75 L_t$.

3.0 CONCLUSION

Based on review of the licensee's Appendix J partial exemption request, the staff concludes that the licensee's approach for continuing Type A containment leakage rate testing when excessive leakage is identified satisfies the intent of the regulation and is, therefore, technically acceptable. Also, the proposed "as found" Type A test acceptance criterion of L_a or L_t , as appropriate, is acceptable and the requested exemption should be granted.

Principal Contributor: J. Pulsipher

Dated: August 14, 1989