



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 76 TO FACILITY OPERATING LICENSE NO. NPF-58  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.  
PERRY NUCLEAR POWER PLANT, UNIT NO. 1  
DOCKET NO. 50-440

1.0 INTRODUCTION

Containment leak rate testing is necessary to demonstrate that the measured leak rate is within the acceptance criteria cited in the licensing design basis. Periodic testing of the overall containment structure along with separate leak testing of the penetrations provides assurance that post-accident radiological consequences will be within the limits of 10 CFR Part 100. The Commission's requirements regarding leak rate testing are found in Appendix J to 10 CFR Part 50.

By letter dated October 21, 1994 (PY-CEI/NRR-1650L), the licensee requested an amendment to Facility Operating License NPF-58 for the Perry Nuclear Power Plant (PNPP). The amendment would make changes to Technical Specification 3/4.6.1.2, "Primary Containment Leakage," and its associated Bases to reflect proposed exemptions to the requirements of 10 CFR Part 50, Appendix J, Option A, Sections III.A.5(b)(2), III.B.3, III.C.3, III.A.1(d), III.D.1(a), and III.D.3. The proposed exemptions were submitted by separate letter, also dated October 21, 1994 (PY-CEI/NRR-1651L).

The proposed exemptions to Appendix J, Option A, were subsequently approved by the staff in a letter dated December 4, 1995. The approved exemptions will:

- a. Exclude main steam line isolation valve leakage from inclusion in both the containment integrated leak rate (Type A) test and the combined local leak rate (Type B and C) tests, and clarify that the main steam lines are not required to be vented and drained for Type A testing;
- b. Decouple performance of the third Type A test from the shutdown for the 10-year plant inservice inspection; and
- c. Allow Type C testing to be performed at times other than during shutdown for refueling.

## 2.0 EVALUATION

### Sections III.A.5(b)(2), III.B.3, III.C.3, and III.A.1(d)

Section III.A.5(b)(2) states that the measured leakage from the containment integrated leak rate (Type A) test ( $L_{am}$ ) shall be less than 75% of the maximum allowable leakage rate ( $0.75 L_a$ ). The licensee proposed to exempt main steam line isolation valve leakage from Type A test results and consider leakage from the main steam lines separately. Sections III.B.3 and III.C.3 require that the combined leakage of valves and penetrations subject to Type B and C local leak rate testing be less than 0.6 times the maximum allowable leakage rate ( $0.6 L_a$ ). The licensee proposed to exempt main steam line isolation valve leakage from the combined leakage from Type B and C local leak rate testing and consider leakage from the main steam lines separately. Section III.A.1(d) requires that all fluid systems that would be open to containment following post-accident conditions, be vented and drained prior to conducting Type A tests. The licensee proposed that the piping between the inboard and outboard main steam line isolation valves be flooded with water when Type A tests are conducted.

In support of these exemptions, the licensee proposed modifying Technical Specification Limiting Condition for Operation (LCO) 3.6.1.2.a by inserting words to clearly state that main steam line isolation valve leakage is separate from the overall integrated leakage rate. Similar wording would also be inserted in Action 3.6.1.2.a. The licensee has also proposed to add a superscript "#" to LCO 3.6.1.2.b and to Action 3.6.1.2.b to refer to a footnote which clarifies that an Appendix J exemption is involved.

During the original staff review of the PNPP, the licensee proposed separate treatment of measured leakage past the main steam isolation valves. The licensee's radiological dose analysis assumed separate contributions from both containment leakage and main steam isolation valve leakage. This approach was reviewed and approved in the staff's Safety Evaluation Report (NUREG-0887). The PNPP Final Safety Analysis Report and technical specifications limit the maximum containment leakage to 0.20 percent per day. In addition, technical specifications limit the maximum allowable leakage of each main steam line to 25 standard cubic feet per hour.

Consistent with separate handling of main steam line isolation valve leakage, the licensee proposed that the piping between the inboard and outboard isolation valves be filled with water when Type A tests are performed. Filling these sections of pipe ensures that air does not pass through these lines thus inadvertently contributing to the Type A test results.

The methodology proposed by the licensee accounts for all containment leakage paths. Treating main steam line isolation valve leakage separately from both the integrated Type A test and the combined Type B and C tests still verifies that the total leakage is within the design limits and, therefore, meets the underlying purpose of the rule.

On this basis, the staff found that separating main steam line isolation valve leakage from Type A, B and C leak rate tests would not present an undue risk

to the public health and safety. Accordingly, the NRC approved the issuance of the subject exemption on December 4, 1995.

Based on the above, and because the licensee's proposed change to the technical specifications is consistent with the exemption approved by the NRC, the staff finds these changes acceptable.

#### Section III.D.1(a)

Section III.D.1(a) requires, in part, that "...a set of three Type A tests shall be performed, at approximately equal intervals during each 10-year service period. The third test of each set shall be conducted when the plant is shutdown for the 10-year plant inservice inspections." The licensee proposes to perform the three Type A tests at approximately equal intervals within each 10-year period, with the third test of each set conducted as close as practical to the end of the 10-year period. However, there would be no required connection between the Appendix J 10-year interval and the inservice inspection 10-year interval.

In support of this proposed exemption, the licensee proposed modifying Technical Specification 4.6.1.2.a by deleting the sentence requiring that the two tests be performed during the same outage.

The 10-year plant inservice inspection (ISI) is the series of inspections performed every 10 years in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50.55a. The licensee performs the ISI volumetric, surface, and visual examinations of components and system pressure tests in accordance with 10 CFR 50.55a(g)(4) throughout the 10-year inspection interval. The major portion of this effort is presently being performed every refueling outage. As a result, there is no extended outage in which the 10-year ISI examinations are performed.

There is no benefit to be gained by the coupling requirement cited above in that elements of the ISI program are conducted throughout each 10-year cycle rather than during a refueling outage at the end of the 10-year cycle. Consequently, the subject coupling requirement offers no benefit either to safety or to the economical operation of the facility.

Moreover, each of these two surveillance tests (i.e., the Type A tests and the 10-year ISI program) is independent of the other and provides assurances of different plant characteristics. The Type A test assures the required leak-tightness to demonstrate compliance with the guidelines of 10 CFR Part 100. The 10-year ISI program provides assurance of the integrity of the structures, systems and components as well as verifying operational readiness of pumps and valves in compliance with 10 CFR 50.55a. There is no safety-related concern necessitating their coupling in the same refueling outage. Accordingly, the staff finds that the subject exemption request meets the underlying purpose of the rule.

On this basis, the staff found that the uncoupling of the Type A tests from the 10-year ISI program would not present an undue risk to the public health and safety. Accordingly, the NRC staff approved the issuance of the subject exemption on December 4, 1995.

Based on the above, and because the licensee's proposed change to the technical specifications is consistent with the exemption approved by the NRC, the staff finds these changes acceptable.

### Test Methodologies

The current PNPP Technical Specification 4.6.1.2 states that the containment integrated leak rate test shall be performed using the criteria specified in Appendix J to 10 CFR Part 50 using the methods and provisions of ANSI N45.4-1972 and BN-TOP-1. In addition, Specification 4.6.1.2 states that the test results shall also be reported based on the Mass Point Methodology described in ANSI/ANS N56.8-1981. The Mass Point Methodology of ANSI/ANS N56.8-1981 is intended for use when the Type A tests are greater than 24 hours in duration whereas BN-TOP-1 is to be used for durations less than 24 hours.

Subsequent to the original licensing of the PNPP, Appendix J to 10 CFR Part 50 has been revised to reflect NRC approved methodologies and updated versions of ANSI standards. However, by referencing specific standards in the technical specifications, the licensee does not have the flexibility to incorporate updated versions without processing a license amendment. Therefore, the licensee has proposed modifying Specification 4.6.1.2 to only reference BN-TOP-1 and the criteria specified in Appendix J while eliminating references to ANSI N45.4-1972 and ANSI/ANS N56.8-1981. Since Appendix J now references both ANSI N45.4-1972 and ANSI/ANS N56.8-1987, the licensee will be able to adopt the latest ANSI standards along with any future updates to Appendix J. The proposed Specification 4.6.1.2 clarifies that the provisions of BN-TOP-1 may be used for Type A tests having a duration less than 24 hours.

The proposed modification still requires the licensee to be in conformance with the criteria of Appendix J. By deleting references to specific ANSI standards, the licensee gains the additional flexibility to adopt updated standards without processing a license amendment. Since the proposed change does not alter the licensee's compliance with the requirements of Appendix J, the staff finds the proposed change to be acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Ohio state official was notified of the proposed issuance of the amendment. The state official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to 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 or a change to a surveillance requirement. The staff has determined that the amendment involves no significant increase in

the amounts, and no significant change in the types, of any effluent 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 (60 FR 42611). Accordingly, this amendment meets 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 this amendment.

#### 5.0 CONCLUSION

The staff 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Douglas Pickett

Date: December 8, 1995