



**PERRY NUCLEAR POWER PLANT**

10 CENTER ROAD  
PERRY, OHIO 44081  
(216) 259-3737

Mail Address:  
PO. BOX 97  
PERRY, OHIO 44081

**Robert A. Stratman**  
VICE PRESIDENT - NUCLEAR

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PY-CEI/NRR-1577 L

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555

Perry Nuclear Power Plant  
Docket No. 50-440  
Request for Two Exemptions From  
The Type A Testing Requirements  
of 10 CFR 50 Appendix J

Gentlemen:

Pursuant to the requirements of 10 CFR 50.12, two exemptions to portions of the Type A containment integrated leakage rate testing criteria within 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" are requested for the Perry Nuclear Power Plant (PNPP), Unit 1.

Attachment 1 contains a discussion of the basis for the proposed Type A testing exemptions. In conjunction with this letter, a Technical Specification change request is also being submitted (see letter PY-CEI/NRR-1576L, dated March 1, 1993).

If you have any questions, please feel free to call.

Sincerely,



Robert A. Stratman

RAS:RAL:ss

Attachment

cc: NRC Project Manager  
NRC Resident Inspector Office  
NRC Region III

050055

Operating Companies  
Cleveland Electric Illuminating  
Toledo Edison

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PDR ADOCK 05000440  
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correction to the containment overall integrated leak rate measured in the modified Type A test. Accordingly, there will be very little significant difference between the calculated "as-left" reactor primary containment leak rate (i.e., the modified Type A test) and one which would be directly measured in compliance with the current requirements of Section III.A.1.(a) of Appendix J.

With respect to the issue of making repairs and/or adjustments to potentially excessive leakage paths during a Type A test rather than after aborting a Type A test, there is no significant difference in the end result; i.e., the "as-left" local leak rates will be maintained within an acceptable range.

The subject exemption request does not pose any undue risk to public health and safety in that PNPP will continue to demonstrate that the containment overall integrated leak rate will be less than the specified value within the PNPP Technical Specifications prior to restart after an outage in which a Type A test was performed using the same acceptance criterion, (i.e.  $0.75 L$ ). Further, any potentially excessive leak paths will continue to be repaired and or adjusted prior to restart from each refueling outage thereby continuing to ensure the integrity of the containment between Type A tests. Based on these considerations the proposed method of conducting modified periodic Type A tests will ensure the integrity of the primary containment with respect to compliance with the maximum permissible containment leakage rate specified in the PNPP design basis. Therefore, the protection provided by the alternate methods against potentially excessive containment leakage will not present an undue risk to the public health and safety.

#### Part B - Revision and Clarification to the Type A Testing Acceptance Criteria

Section III.A.5.(b)(2) of Appendix J establishes an acceptance criterion for the total measured containment leakage rate,  $L$ , measured at the peak containment internal pressure,  $P$ , calculated for the design basis accident. The periodic Type A (or containment integrated leak rate) tests at PNPP are conducted at  $P$ . The current acceptance criterion for these tests is that  $L$  be less than 75 percent of the maximum allowable leak rate,  $L$ , as specified in Technical Specification Limiting Condition for Operation 3.6.1.2.a; where  $L$  is 0.20 percent by weight of the containment air per 24 hours.

It is proposed to adopt separate criteria for the "as-found" and "as-left" test results in lieu of the present single criterion cited above (i.e.,  $L$  less than  $0.75 L$ ), that is, the "as-found" allowable leak rate would be  $L$  and the "as-left" allowable leak rate would be less than  $0.75 L$ .

The basis for this approach is that the acceptance criterion for  $L$  was established in Appendix J as  $0.75 L$  in order to provide a margin of 25 percent (i.e.,  $0.25 L$ ) to account for possible deterioration of the

Section III.A.1.(a) further requires that after terminating a Type A test due to potentially excessive leakage, the leakage through the potentially excessive leakage paths be measured using local leak rate testing methods, and repairs and/or adjustments to the affected equipment be made. The Type A test shall then be conducted.

This exemption request instead proposes that when excessive leakage is found during a Type A test, that the test not be terminated. Instead, the significant leaks will be identified and isolated and the Type A test continued. After completion of this modified Type A test (i.e., a Type A test with the significant leakage paths isolated), local leak rate testing of those paths isolated during the modified Type A test would be performed before and after repairs and/or adjustments to those paths are made.

The adjusted "as-found" leak rate for the Type A test would be determined by adding the local leak rates measured before any repairs and/or adjustments to those previously isolated leakage paths, to the containment integrated leakage rate determined in the modified Type A test. This adjusted "as-found" leak rate is used in determining the scheduling of the periodic Type A tests in accordance with Section III.A.6 of Appendix J.

The determination of the acceptability of the Type A test would be made by calculating the adjusted "as-left" containment overall integrated leakage rate and comparing this to the acceptance criterion of being less than 75% of the maximum allowable leakage rate,  $L$ . This adjusted "as-left" Type A leakage rate is determined by adding the local leak rates measured after any repairs and/or adjustments to those previously isolated leakage paths, to the leak rate determined in the modified Type A test. For a satisfactory Type A test, the adjusted Type A results (the sum of the appropriate differential local leak rates and the Type A test results) must be made less than 75% of the maximum allowable leakage rate  $L$ , prior to startup from an outage in which a Type A test (the ILRT) is performed.

The only differences between this approach and the current requirements in Section III.A.1.(a) of Appendix J are that: (1) the potentially excessive leakage paths are repaired and/or adjusted after completion of the Type A test rather than before the test; and (2) the Type A "as-left" leak rate is partially determined by calculation rather than by direct measurement (the Type A "as-found" value has always involved partial determination by calculation whenever penetrations exhibited potentially excessive leakage and were therefore subjected to local leak rate tests prior to repairs). With respect to the second difference, the  $L$  value for PNPP is 0.20 percent by weight of the primary containment air over a 24-hour period measured at P. The measured "as-left" local leak rates through the paths isolated in the modified Type A test are a small fraction of this Technical Specification value so that the values of these "as-left" local leakage rates will represent a relatively small

B. The Exemption Requests Will Not Present an Undue Risk to the Public Health and Safety and Are Consistent With the Common Defense and Security

An exemption request will not present an undue risk to the public health and safety if it can be shown that the request meets the statutory standard of adequate protection to the health and safety of the public.

To ensure that an undue risk to the public health and safety is not created, the exemption request must demonstrate that the proposed changes; i.e., not stopping the containment Integrated Leak Rate Test when excessive leakage is found, but instead factoring the results of LLRTs on the affected penetrations back into the Type A test results, and, revising the Technical Specifications to utilize L as the "as-found" Type A test maximum allowable leakage rate value, will not result in an increase in the radiological consequences of any postulated accident where containment isolation is involved.

No impact on the common defense and security part of this regulation is imposed by the proposed changes.

For the reasons stated below, the granting of the requested exemptions will not affect any of these matters, and, thus, the granting of the exemptions will not present an undue risk to the public health and safety and is consistent with the common defense and security.

The objective of 10 CFR 50 Appendix J Type A testing is to verify the primary containment is capable of maintaining its leak-tight integrity during normal and post-accident conditions. Leak rate acceptance criteria are based on 10 CFR 100 calculations. Consistent with 10 CFR 50 Appendix J, the containment ILRT is either conducted in the containments' "as-found" condition, or after any necessary repairs are made the containment ILRT leak rate testing results are adjusted in order to provide an "as-found" leakage rate. The "as-found" condition of the containment is determined in order to obtain an indication of the ability of the containment to remain within the leak rate assumed in the accident analyses throughout the period between Type A tests, and for the purpose of determining subsequent testing frequency. An "as-left" value for the containment leak rate is also determined, and is limited to a fraction of the leak rate value assumed in the accident analysis in order to account for possible degradation of the containment leakage barriers between leakage tests.

Part A - Allowance to Continue the Type A Test if Excessive Leakage Paths are Identified During the Test by Isolating Such Paths and Factoring LLRT Results into the Type A Test Results

Section III.A.1.(a) of Appendix J requires that a Type A test be terminated if, during the test, potentially excessive leakage paths are identified which would either interfere with satisfactory completion of the test or which would result in the Type A test not meeting the applicable acceptance criteria.

## Summary

This exemption request proposes two exemptions from the Type A testing requirements of 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." The first proposed exemption involves removal of the 10 CFR 50 Appendix J, Section III.A.1(a) restriction that the containment Integrated Leak Rate Test (ILRT) (the Type A test) be stopped if potentially excessive leakage is determined. This exemption would permit the satisfactory completion of the Type A test if the potentially excessive leakage pathways are isolated during the Type A test, and are subsequently subjected to local leak rate tests (Type B or C tests) with these quantified leakage values appropriately factored into the Type A test results.

The second proposed exemption involves 10 CFR 50 Appendix J, Section III.A.5(b)(2), which states that for a peak pressure Type A test, the measured leakage rate,  $L$ , be less than 75 percent of the maximum allowable leakage rate  $L$ , measured at the peak calculated containment internal pressure,  $P$ . This exemption would specify that the 75 percent of  $L$  limit is applied only as the "as-left" Type A leak test acceptance criterion and that  $L$  is applied as the "as-found" Type A leak test acceptance criterion.

In conjunction with the second proposed exemption to 10 CFR 50 Appendix J, a Technical Specification change is being requested (see letter PY-CEI/NRR-1576L dated March 1, 1993). This change to Technical Specification 3.6.1.2, "Primary Containment Leakage" involves revisions within Limiting Condition for Operation (LCO) 3.6.1.2.a, Action 3.6.1.2.a and Surveillance Requirement 4.6.1.2.b to specify that  $L$  will be used as the acceptance criterion for the "as-found" Type A containment ILRT results and that  $0.75 L$  will be used as the "as-left" Type A test acceptance criterion applied prior to startup from an outage in which a Type A test was performed.

## Justification for Granting the Exemption Requests

The specific requirements for granting exemptions from Part 50 regulations are set forth in 10 CFR 50.12, "Specific Exemptions". Under Section 50.12 the Commission is authorized to grant an exemption upon a demonstration that the exemption: (a) is authorized by law, (b) will not present an undue risk to the public health and safety, (c) is consistent with the common defense and security, and (d) special circumstances exist. The following justifications address each of these requirements and demonstrate that the Commission should grant the requested exemption.

### A. The Exemption Requests are Authorized By Law

The Commission's authority to grant requests for exemptions from its regulations as described in 10 CFR 50 is defined within 10 CFR Section 50.12. Therefore, exemptions are consistent with the regulatory scheme established by the NRC and are not prohibited by any statutory authority. Hence, exemption requests are authorized under NRC regulations.

primary containment leak-tightness between periodic Type A tests. The value of  $L$  is the actual leak rate used in the plant safety analyses to determine the offsite radiological consequences of an accident. The "as-left" Type A test limit of  $0.75 L$  was specified in order to provide this  $0.25 L$  margin for possible degradation of the containment leak-tightness between Type A tests. Since  $L$  is the actual leakage (design value) assumed in the offsite dose analyses, and the "as-found" test measures the leak rate at the end of the period between Type A tests (where margin for degradation is no longer needed), it is technically appropriate to use  $L$  as the "as-found" Type A results criterion. The "as-left" acceptance criterion would remain at the present value - established as less than  $0.75 L$ . This continues to provide the 25 percent margin for degradation over the operating cycle(s) between Type A tests.

The  $L$  criterion for the "as-found" maximum allowable leak rate result is acceptable on the basis that, throughout the prior Type A test interval, the primary containment leakage would have been at or below the value assumed in the accident analyses in the PNPP Updated Safety Analysis Report. This approach continues to maintain the requirement that the primary containment leak rate prior to restart of the plant from an outage in which a Type A test was performed (i.e., the "as-left" condition) be re-established as less than  $0.75 L$ .

There is added assurance that there will not be any significant undetected degradation in the primary containment leakage during each Type A test interval in that the primary contributors to potentially excessive leakage paths are measured during the required Type B and Type C tests. These tests are conducted at least during each periodic refueling outage (about every 18 months) but in no case at intervals greater than 2 years (as required by Sections III.D.2 and III.D.3 of Appendix J). The principal contributors to any deterioration in the containment leak rate would therefore be detected and corrected at least once during a nominal 36-month Type A test interval and at least twice during a nominal 54-month Type A test interval.

The proposed exemption does not pose any undue risk to the public health and safety in that the containment overall integrated leak rate will continue to be demonstrated to be less than the value specified in the PNPP Technical Specifications prior to restart after a refueling outage in which a Type A test was performed, using the present acceptance criterion of  $0.75 L$ . This continues to provide margin for degradation (between Type A tests) to the design basis allowable leakage rate of  $L$ , and ensures that the Part 100 design basis is met. Further, any potentially excessive leakage paths will be identified during Type B and C testing and continue to be repaired and/or adjusted at intervals of approximately 18 months, thereby further ensuring the integrity of the containment. Based on the above considerations, the alternative criteria for the leak-tightness of the primary containment will ensure its integrity with respect to compliance with the maximum permissible containment leak rate specified in the PNPP design basis, and will not present an undue risk to the public health and safety.

This change is consistent with the proposed 10 CFR 50 Appendix J rule changes published in the Federal Register on October 29, 1986. Also, several plants have received similar exemptions and corresponding amendments to their Technical Specifications, to utilize L<sub>a</sub> as their "as-found" limit.

C. Special Circumstances are Present

The following special circumstance(s) as identified in Section 50.12(a)(2), is relevant to these exemption requests:

- (ii) Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule;

These exemptions will not pose any undue risk to the health and safety of the public or involve a significant safety hazard as discussed in Section B of this letter. Special circumstances, as provided in 10 CFR 50.12(a)(2)(ii), are present justifying these exemptions from Appendix J. Namely, that application of the regulation in these particular circumstances in the exact way it is presented is not necessary to achieve the underlying purpose of the rule, which is to ensure that accurate and conservative methods are used to assess the results of containment leak rate tests. These exemption requests are similar to exemptions which have been previously approved for other nuclear power plants.

Therefore, continued application of Appendix J Sections III.A.1(a) and III.A.5(b)(2) to the PNPP facility would not serve and is not necessary to achieve the underlying purpose of Appendix J.

Based on these findings, special circumstances exist which justify the granting of these exemption requests. Consequently, these exemption requests meet the special circumstances test and should be granted pursuant to Section 50.12(a).

Conclusion

Because these exemptions from the requirements of 10 CFR 50 Appendix J for PNPP Unit 1 are authorized by law, will not present an undue risk to the public health and safety, are consistent with the common defense and security, and special circumstances exist, we respectfully submit that, in accordance with the requirements of 10 CFR 50.12, the NRC should grant the requested exemptions.

Proposed Technical Specification Bases Changes

The Bases for the Containment Leakage specification (Specification 3/4.6.1.2) currently only describe an exemption to Appendix J granted for air lock testing. Letter PY-CEI/NRR-1576, dated March 1, 1993, provides a rewritten version of the existing Bases to clarify the wording and sets the framework for a listing in the Bases of the Technical Specifications of other Appendix J exemptions, such as the ones requested herein. A copy of revised Bases pages dealing with the Appendix J exemptions is provided as Attachment 2 to this letter. The additional exemption proposed to Section III.A.1.(a) within this letter is highlighted in Attachment 2. It is proposed that this wording be added to the Bases of Specification 3/4.6.1.2 following approval of this exemption request.