

Power Generation Group

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United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
License Amendment Request: Implementation of an Appendix J, Option B,
Performance-based Primary Containment Leakage Rate Testing Program

Ladies and Gentlemen:

Pursuant to 10CFR50.90, Nuclear Regulatory Commission (NRC) review and approval of a license amendment for the Perry Nuclear Power Plant (PNPP) Unit 1 is requested. This license amendment involves implementation of an Appendix J, Option B, Performance-based Primary Containment Leakage Rate Testing Program at the Perry Nuclear Power Plant (PNPP), for Type A, B, and C leak rate tests.

Attachment 1 provides a Summary, an Implementation Schedule, a Description of the Proposed Changes, a Safety Analysis, and an Environmental Consideration. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides a copy of the marked-up Technical Specification pages. Attachment 4 provides marked-up Bases and Table of Contents pages, for information, since they are not a formal part of the Technical Specifications.

If you have questions or require additional information, please contact Mr. Henry L. Hegrat,
Manager - Regulatory Affairs, at (216) 280-5606.

Very truly yours,

for Lew W. Myers

BSF:sc

Attachments

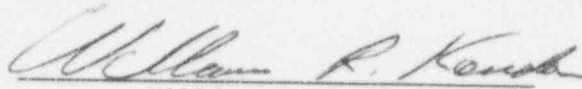
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cc: NRC Project Manager
NRC Resident Inspector
NRC Region III
State of Ohio

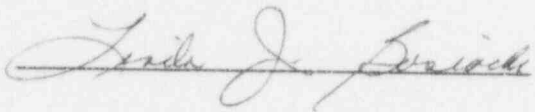
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Ad 7

I, William R. Kanda, being duly sworn state that (1) I am Director, Perry Quality and Personnel Development Department of the Cleveland Electric Illuminating Company, (2) I am duly authorized to execute and file this certification on behalf of The Cleveland Electric Illuminating Company and Toledo Edison Company, and as the duly authorized agent for Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.


William R. Kanda

Sworn to and subscribed before me, the 31st day of January,
1997.



LINDA J. BOSIACKI
Notary Public, State of Ohio
Commission Expires April 23, 2001
(Recorded in Lake County)

CODED/8838/SC

SUMMARY

Licensees are required to conduct periodic primary reactor containment leakage testing in accordance with 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." Compliance with Appendix J provides assurance that leakage from the primary containment, and the penetrations and isolation valves for those systems and components that penetrate the primary containment, does not exceed the allowable leakage rate values specified in the Technical Specifications.

As part of the Nuclear Regulatory Commission's (NRC) effort to eliminate requirements marginal to safety which impose a significant regulatory burden, the NRC Staff undertook a study of possible changes to 10 CFR 50 Appendix J. 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. The revision to Appendix J, which became effective on October 26, 1995, added Option B, "Performance-Based Requirements" 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.

Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," was developed as a method acceptable to the NRC Staff for implementing Option B. The Regulatory Guide states that the Nuclear Energy Institute (NEI) document NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," provides methods acceptable to the NRC for complying with Option B, with four exceptions that are described therein.

Option B requires that the implementation document used by the licensee to develop a performance based leakage testing program must be included, by general reference, in the plant's Technical Specifications. The implementation document used by the Perry Nuclear Power Plant (PNPP) for development of their performance based leakage testing program is Regulatory Guide 1.163. Exceptions to the Regulatory Guide are identified in the program description that is being added into the Technical Specifications by this change request.

Except for the method of defining test frequency, no change in the method of testing is proposed. Other programs are also in place to ensure that proper maintenance and repairs are performed during the service life of the primary containment and the systems and components penetrating the primary containment. The primary containment and systems and components penetrating the primary containment will remain capable of maintaining radioactive effluent releases within the limits of 10 CFR 100.

IMPLEMENTATION SCHEDULE

June 15, 1996 Commenced development of a computer data base to include previous testing and Work Order histories, valve sizes, valve manufacturers and administrative leakage limits.

August 15, 1996 Commenced development of a document to define and establish the Performance-Based Testing Program including initial test intervals. This includes:

1. Description of the program requirements.
2. Administrative Limits for Type B and C components/tests.
3. Leakage history of tested components [approximately 6 years].
4. Selection process for establishing extended intervals.
5. Initial scheduling of components to be tested.
6. Documentation requirements.

September 15, 1996 Completed development of computer data base.

October 15, 1996 Completed development of Performance-Based Testing Program document except for final approval [pending approval of License Amendment].

February 15, 1997 Expected date for completion of changes to testing instructions necessary to support implementation of 10 CFR 50, Appendix J, Option B, and the Performance-Based Testing Program, except for final approval [pending approval of License Amendment].

September 13, 1997 Implement the Performance-Based Testing Program at the commencement of the sixth refueling outage.

DESCRIPTION OF THE PROPOSED TECHNICAL SPECIFICATION CHANGE

Surveillance Requirements (SR) in Technical Specifications 3.6.1.1, 3.6.1.2, and 3.6.1.3 are revised to reference the Primary Containment Leakage Rate Testing Program, rather than 10 CFR 50 Appendix J. A new section, Technical Specification 5.5.12, "Primary Containment Leakage Rate Testing Program," which consolidates information on the required tests, is being added to Section 5.5, "Programs and Manuals." Technical Specification Section 1.1 is revised to remove the definition of Maximum Allowable Primary Containment Leakage Rate, since the text has been relocated into the new Section 5.5.12. In addition, a revision is made to the frequency of SR 3.6.5.1.2 as a result of a previous commitment. Refer to Attachment 3 for a marked-up copy of the affected Technical Specification pages. The Technical Specification and Bases changes are modeled after example markups that have been developed in discussions between the NRC and industry groups such as NEI and the various Owners Groups.

[Note: The Bases and the Table of Contents are not part of the Technical Specifications (TS), and are not a formal part of this license amendment package. The Bases are revised under the PNPP

Bases Control Program (TS 5.5.11). The proposed Bases and Table of Contents mark-ups are contained in Attachment 4 "for information only".]

SAFETY ANALYSIS

The changes proposed in this license amendment revise the existing specific guidance in the technical specifications with a reference to a Primary Containment Leakage Rate Testing Program. The Primary Containment Leakage Rate Testing Program will be established in accordance with the recommendations of Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program" with exceptions. This program will provide the acceptance criteria and testing schedule for containment penetrations in accordance with 10 CFR 50, Appendix J, Option B.

The use of 10 CFR 50, Appendix J, Option B has been determined to have a minimal impact on public health and safety. The option allows for reduced testing of those containment penetrations which have good performance histories.

The NRC Staff has reviewed the potential impacts on safety through the use of 10 CFR 50, Appendix J, Option B and documented the impact in NUREG-1493, "Performance-Based Containment Leakage-Test Program." This document summarizes the impact of reducing the Type A tests (Integrated Leak Rate Tests), from the current three tests in ten years to a minimum of one test in ten years, as an imperceptible increase in risk. For Type B and C testing (Local Leak Rate Tests) the change in testing frequency should not have significant impact since this leakage contributes less than 0.1 percent of the overall accident risk based on the existing regulations. The overall impact of the combined rule changes was very small. The use of Option B will allow the test intervals to be extended without challenging the radiological release limits from the site since most of the penetrations are periodically tested with resulting leakage rates well below the specified limits.

The testing history at PNPP Unit 1 has shown that the use of Option B will provide an adequate level of assurance that the containment will perform its intended safety function and the radiological release limits will be maintained well below the licensing acceptance limits which are the guideline values of 10 CFR 100.11, "Reactor Site Criteria."

The use of Option B will also reduce the exposure to workers at the site during performance of the required testing in accordance with the Primary Containment Leakage Rate Testing Program. NUREG-1493 determined that for Type B and C testing, the onsite doses (i.e., occupational doses incurred while performing leakage testing) decreased significantly.

As noted above, the Primary Containment Leakage Rate Testing Program is being established in accordance with the recommendations of Regulatory Guide 1.163, with exceptions. The exceptions being taken at PNPP are listed in the Program description being included in Technical Specification Section 5.5, "Programs and Manuals," and consist of the following:

- a) BN-TOP-1 methodology may be used for Type A tests.

- b) The corrections to NEI 94-01 that are identified on the Errata Sheet attached to the NEI letter, "Appendix J Workshop Questions and Answers," dated March 19, 1996, are considered to be an integral part of NEI 94-01.

The use of BN-TOP-1 has previously been approved for use at PNPP (see TS Bases page B 3.6-4), and is listed here as an exception since the Regulatory Guide and documents endorsed by the Regulatory Guide do not explicitly address the use of the BN-TOP-1 report. The Errata Sheet to NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," provides resolution to several inconsistencies within the NEI document. The Errata Sheet is listed here as an exception since Regulatory Guide 1.163 endorses NEI 94-01, and the Errata Sheet to NEI 94-01 was issued after Regulatory Guide 1.163.

The "less than" and "less than or equal to" signs on the Technical Specification acceptance criteria for the Type A, B, and C leak rate tests are being made consistent with the guidance provided by NEI 94-01. Currently, in Surveillance Requirement (SR) 3.6.1.1.1, the criteria are $\leq 1.0 L_a$ and $< 0.75 L_a$ for the as-found and as-left Type A tests, respectively, and $< 0.60 L_a$ for the combined Type B and C tests. These values are relocated to the new Section 5.5.12, but the signs associated with these values are changed to $< 1.0 L_a$, $\leq 0.75 L_a$, and $< 0.60 L_a$. The NRC has endorsed NEI 94-01 in Regulatory Guide 1.163, and therefore these are considered to be editorial/consistency changes.

The current wording for the Frequency of SR 3.6.5.1.2 is being revised to retain frequent visual inspections of the Drywell surfaces. The Frequency currently states that the Drywell visual inspections shall be performed prior to performance of each Type A test required by SR 3.6.1.1.1. Following implementation of the performance-based Type A testing program, the frequency of these tests could change from a standard frequency of three times in a 10 year inservice inspection interval (a "service period"), to a minimum of one test in ten years. A previous commitment had been made in a letter dated December 6, 1996 (PY-CEI/NRR-2119L) to maintain the standard 'three times in a 10 year inservice inspection interval' frequency if a performance-based Type A program was adopted. Therefore, an administrative, editorial change is made to the Frequency of SR 3.6.5.1.2 to retain the standard frequency.

It should be noted that the Program description provided in TS Section 5.5.12 provides a "general reference" to Regulatory Guide 1.163, as required by Section V.B.3 of Appendix J, Option B. A specific revision level of the Regulatory Guide is not listed within the Technical Specification. The NRC staff may issue subsequent approved revisions to the Regulatory Guide, which could easily be endorsed for use at PNPP if there is no need for additional exceptions (other than those listed above) to the revised Regulatory Guide. Should additional exceptions be desired to the revised Regulatory Guide, then a Technical Specification change request would need to be submitted to the NRC, since the Program description is worded such that it requires listing of any exceptions to the Regulatory Guide. If, instead, a specific revision level of the Regulatory Guide is listed in the text of the Technical Specifications, then an

administrative Technical Specification change request would need to be processed to note that a pre-approved NRC guidance document will be utilized at PNPP. Specific revision levels for Regulatory Guides to which PNPP is committed are documented in Updated Safety Analysis Report (USAR) Table 1.8-1, "Conformance to NRC Regulatory Guides".

Addition of the program requirements in the Programs and Manuals section of the Technical Specifications has no adverse safety consequences.

The performance based testing program will continue to limit primary containment leakage to the design basis acceptance criteria. The functions and operation of the primary containment and systems and components penetrating the primary containment will remain unchanged.

Based on the above, the use of 10 CFR 50, Appendix J, Option B in accordance with Regulatory Guide 1.163 will provide adequate assurance that the containment will perform its intended design function, and have a minimal impact on public health and safety or radiological release limits.

ENVIRONMENTAL CONSIDERATION

The proposed Technical Specification change request was evaluated against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not significantly increase individual or cumulative occupational radiation exposures, does not significantly change the types or significantly increase the amounts of effluents that may be released off-site and, as discussed in Attachment 2, does not involve a significant hazards consideration. Based on the foregoing, it has been concluded that the proposed Technical Specification change meets the criteria given in 10 CFR 51.22 (c)(9) for categorical exclusion from the requirement for an Environmental Impact Statement.

REFERENCES

1. NUREG-1493, "Performance-Based Containment Leakage-Test Program."
2. Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program."
3. 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors."
4. Nuclear Energy Institute (NEI) document NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," including the Errata Sheet attached to the NEI letter, "Appendix J Workshop Questions and Answers," dated March 19, 1996.

COMMITMENTS

The following table identifies those actions which are considered to be regulatory commitments. Any other actions discussed in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments. Please notify the Manager - Regulatory Affairs at the Perry Nuclear Power Plant of any questions regarding this document or any associated regulatory commitments.

Commitments

The Primary Containment Leakage Rate Testing Program will be established in accordance with the recommendations of Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program" with exceptions. This program will provide the acceptance criteria and testing schedule for containment penetrations in accordance with 10 CFR 50, Appendix J, Option B.

SIGNIFICANT HAZARDS CONSIDERATION

The standards used to arrive at a determination that a request for amendment involves no significant hazards considerations are included in the Commission's Regulations, 10 CFR 50.92, which state that the operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any previously evaluated; or (3) involve a significant reduction in a margin of safety.

The proposed amendment has been reviewed with respect to these three factors and it has been determined that the proposed change does not involve a significant hazard because:

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The changes involved in this license amendment request revise the criteria for determining the Containment leak rate testing interval based upon past component performance. The revised criteria are based on the guidance contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program." When the containment or containment penetrations have performed satisfactorily on a historical basis, this guidance permits the use of extended testing frequencies.

Since the allowable leakage rates are not being affected, the performance of the primary containment and systems and components penetrating the primary containment remains within acceptable limits. The functions and operation of these components will remain unchanged. Since the components are utilized to mitigate the consequences of accidents that require containment isolation, they are not considered to be accident initiators. Additionally, there are no accidents associated with implementation of a performance-based testing frequency for the primary containment and systems and components penetrating the primary containment.

As discussed previously, the components are utilized to mitigate the consequences of accident scenarios which rely upon the primary containment and systems and components penetrating the primary containment, to prevent the release of radioactive effluents. The implementation of Option B to 10 CFR 50 Appendix J is not intended to provide relief from the leakage criteria. The components will still be required to meet the leakage requirements as discussed in USAR Section 6.2.6 and Technical Specifications 3.6.1.1, 3.6.1.2, and 3.6.1.3. The primary containment isolation system is designed to limit leakage to L_a , which is defined by the Perry Technical Specifications to be 0.20 percent of primary containment air weight per day at the calculated peak containment pressure (P_a) for the design basis loss of coolant accident. The limitation on the rate of primary containment leakage is designed to ensure that the total leakage volume will not exceed the value assumed in the accident analyses at P_a . The L_a value is not being modified by this proposed change. Based on this,

SIGNIFICANT HAZARDS CONSIDERATION

the primary containment and system and components penetrating the primary containment will remain capable of maintaining radioactive effluent releases within the limits of 10 CFR 100.

Because the proposed change does not alter the plant design, including the primary containment and primary containment penetrations, the proposed change does not directly result in an increase in primary containment leakage. Since the frequency will be based on the performance of the subject components, only those components that have satisfactorily maintained the actual leakage less than the allowable leakage will be tested less frequently. The testing frequency for components which have not satisfactorily limited leakage, or have not performed satisfactorily in the past, will not be altered. Other programs are also in place to ensure that proper maintenance and repairs are performed during the service life of the primary containment and systems and components penetrating the primary containment.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of previously evaluated accidents.

Several administrative/editorial changes have been incorporated (e.g., the clarifications of the "less than" and "less than or equal to" signs on the Technical Specification acceptance criteria, and the retention of the standard frequency for the Drywell visual inspections). Such administrative/editorial changes do not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, these changes also do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed change would not create the possibility of a new or different kind of accident from any previously evaluated.

The proposed change does not involve a change to the plant design or operation, or new system interfaces. Consequently, the proposed change does not affect the parameters or conditions that could contribute to initiation of accidents. This change involves adopting a performance-based method for determining Type A, B, and C test frequencies. Except for the method of defining the test frequency, the methods for performing the actual tests are not changed. No new accident modes would be created by extending testing intervals. No safety related equipment or safety functions are altered as a result of this change. The change in testing frequency will not create any different types of accidents since the primary containment and system and components penetrating the primary containment will continue to operate within their design bases. Therefore, reducing the test frequency would have no influence on, nor contribute to, the possibility of a new or different kind of accident or malfunction from those previously analyzed.

SIGNIFICANT HAZARDS CONSIDERATION

Based on the above discussions, the proposed change would not create the possibility of a new or different kind of accident than those previously evaluated.

The proposed administrative/editorial changes do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. Thus, these changes also do not create the possibility of a new or different kind of accident from any previously evaluated.

3. The proposed change will not involve a significant reduction in the margin of safety.

This request does not involve a significant reduction in a margin of safety. The proposed change adopts a performance-based method for determining frequency of Type A, B, and C testing.

Except for the method of defining test frequency, no change in the method of testing is proposed. Since the frequency will be based on the performance of the subject components, only those components that have satisfactorily maintained actual leakage less than the allowable leakage will be tested less frequently. Other programs are also in place to ensure that proper maintenance and repairs are performed during the service life of the primary containment and systems and components penetrating the primary containment.

The margin of safety associated with the proposed change involves the offsite dose consequences of postulated accidents, which are directly related to the rate of primary containment leakage. The primary containment isolation system is designed to limit leakage to L_a , which is defined by the Perry Technical Specifications to be 0.20 percent of primary containment air weight per day at the calculated peak containment pressure (P_a) for the design basis loss of coolant accident. The limitation on the rate of primary containment leakage is designed to ensure that the total leakage volume will not exceed the value assumed in the accident analyses at P_a . The margin of safety for the offsite dose consequences of postulated accidents directly related to the primary containment leakage rate is maintained by continuing to meet L_a . The L_a value is not being modified by this proposed change. Based on this, the primary containment and systems and components penetrating the primary containment will remain capable of maintaining radioactive effluent releases within the limits of 10 CFR 100.

Therefore, the changes associated with this license amendment request do not involve a significant reduction in the margin of safety.

The proposed administrative/editorial changes will not reduce the margin of safety because they have no impact on safety analysis assumptions. These changes do not involve questions regarding safety issues, and therefore also do not involve a significant reduction in a margin of safety.