



# DRAFT REGULATORY GUIDE

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## DRAFT REGULATORY GUIDE DG-1220

(Proposed Revision 1 of Regulatory Guide 1.163, dated September 1995)

# PERFORMANCE-BASED CONTAINMENT LEAK-TEST PROGRAM

## A. INTRODUCTION

This regulatory guide provides guidance on a performance-based leak-test program, leakage-rate test methods, procedures, and analyses that the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for use in complying with the Option B, performance-based requirements, in Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," to Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations* (10 CFR Part 50). As a condition of their operating licenses, combined licenses, and renewed licenses, and pursuant to 10 C.F.R. §§ 50.54(o) and 54.33(a), primary reactor containments for water cooled power reactors are subject to the requirements in Appendix J to 10 C.F.R. Part 50. Appendix J includes two options: Option A (Prescriptive Requirements) and Option B (Performance-Based Requirements). Either option can be chosen to meet the requirements of Appendix J.

The NRC issues regulatory guides to describe to the public methods that the staff considers acceptable for use in implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific problems or postulated accidents, and to provide guidance to applicants. Regulatory guides are not substitutes for regulations and compliance with them is not required.

This regulatory guide contains information collection requirements covered by Appendix J to 10 CFR Part 50 that the Office of Management and Budget (OMB) approved under OMB control

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This regulatory guide is being issued in draft form to involve the public in the early stages of the development of a regulatory position in this area. It has not received final staff review or approval and does not represent an official NRC final staff position.

Public comments are being solicited on this draft guide (including any implementation schedule) and its associated regulatory analysis or value/impact statement. Comments should be accompanied by appropriate supporting data. Written comments may be submitted to the Rulemaking, Directives, and Editing Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; e-mailed to [nrcprep\\_resource@nrc.gov](mailto:nrcprep_resource@nrc.gov); submitted through the NRC's interactive rulemaking Web page at <http://www.nrc.gov>; or faxed to (301) 492-3446. Copies of comments received may be examined at the NRC's Public Document Room, 11555 Rockville Pike, Rockville, MD. Comments will be most helpful if received by June 26, 2009.

Electronic copies of this draft regulatory guide are available through the NRC's interactive rulemaking Web page (see above); the NRC's public Web site under Draft Regulatory Guides in the Regulatory Guides document collection of the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/doc-collections/>; and the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>, under Accession No. ML090490183.

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## **B. DISCUSSION**

Option B in Appendix J to 10 CFR Part 50 uses a performance-oriented and risk-informed regulatory approach, and allows the licensee the flexibility to adopt cost-effective methods, including setting performance-based test intervals, for implementing the safety objectives of the requirements of Appendix J. The NRC originally developed this regulatory guide in 1995 to endorse the Nuclear Energy Institute (NEI) Topical Report (TR) 94-01 "Industry Guideline for Implementing performance Based Option of 10 CFR Part 50, Appendix J." Revision 0 (Ref. 1) with modifications. NEI TR 94-01 provided an industry guideline that describes in detail a performance-based leak-test program, leakage-rate test methods, procedures, and analyses. The NRC staff determined in 1995 that Revision 0 to industry guideline was an acceptable means of demonstrating compliance with Option B of Appendix J to 10 CFR Part 50.

NEI has since developed NEI TR 94-01, Revision 2, issued August 2007 (Ref. 2), which includes provisions for extending the performance-based Type A test (also known as an integrated leak rate test (ILRT)) interval to 15 years and incorporates the regulatory positions stated in the original version of this regulatory guide, issued September 1995 (Ref. 3). The NRC staff documented its position on the approved NEI TR 94-01, Revision 2, guideline in the final safety evaluation report (FSER) dated June 25, 2008 (Ref. 4). NEI has issued Revision 2-A of NEI TR 94-01 on October 2008 (Ref. 5) which includes the associated NRC FSER.

## **C. REGULATORY POSITION**

NEI TR 94-01, Revision 2-A, provides methods that the NRC staff considers acceptable for complying with the provisions of Option B in Appendix J to 10 CFR Part 50, subject to the limitations and conditions provided in Section 4.0 of the NRC FSER and the following regulatory positions:

1. The normal Type A test interval should be less than 15 years. The NRC staff considers the 15-year Type A test interval a consensus upper-bound performance-based interval. The staff position is that any extension of the Type A test interval beyond the required 15 years should be infrequent and should be used only for compelling reasons. Therefore, if a licensee wants to use the provisions of Section 9.1 in NEI TR 94-01, Revision 2-A, related to extending the Type A test interval beyond 15 years, the licensee will have to demonstrate to the NRC staff that an unforeseen emergent condition exists (see Regulatory Issue Summary (RIS) 2008-27, "Staff Position on Extension of the Containment Type A Test Interval beyond 15 Years under Option B of Appendix J to 10 CFR Part 50," dated December 8, 2008 (Ref. 6)).
2. Components kept on the initial 30-month maximum test interval because of historically poor reliability in maintaining an acceptably low leakage rate (e.g., the main steam isolation valves of boiling-water reactors) are considered to have suspect leakage integrity after a period of plant operation. These components require as-found testing before any maintenance that could affect the leakage rate of the component in order to validate the effectiveness of the maintenance program in maintaining an acceptable leakage performance at all times. The NRC does not consider removing local leakage-rate-testable manway covers or flanges a maintenance action requiring an as-found test unless the scheduled (base or extended interval) local leak-rate test is due or unless their leakage integrity is suspect.

## **D. IMPLEMENTATION**

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this regulatory guide. The NRC does not intend or approve any imposition or backfit in connection with its issuance.

The NRC has issued this draft guide to encourage public participation in its development. The NRC will consider all public comments received in development of the final guidance document. In some cases, applicants or licensees may propose or use a previously established acceptable alternative method for complying with specified portions of the NRC's regulations. Otherwise, the methods described in this guide will be used in evaluating compliance with the applicable regulations for license applications, license amendment applications, and amendment requests.

## **REGULATORY ANALYSIS**

### **Statement of the Problem**

The NRC issued Regulatory Guide 1.163 in September 1995 to endorse NEI TR 94-01, Revision 0, with modifications. NEI TR 94-01 Revision 0 provided an industry guideline that described, in detail, a performance-based leak-test program, leakage-rate test methods, procedures, and analyses. However, since that time, NEI has issued NEI TR 94-01, Revision 2, which includes provisions for extending Type A ILRT intervals up to 15 years and incorporates the regulatory positions stated in Regulatory Guide 1.163 (September 1995). The NRC staff documented its position on the approved Revision 2 of the NEI TR 94-01 guideline in the FSER dated June 25, 2008. The current revision of Regulatory Guide 1.163 does not reflect the latest staff positions based on Revision 2-A of the NEI TR 94-01 guideline.

### **Objective**

The objective of this regulatory action is to update the NRC guidance on an acceptable performance-based leak-test program, leakage-rate test methods, procedures, and analyses that may be used to comply with the performance-based Option B in Appendix J to 10 CFR Part 50.

### **Alternative Approaches**

The NRC staff considered the following alternative approaches:

- Do not revise Regulatory Guide 1.163.
- Update Regulatory Guide 1.163.

#### **Alternative 1: Do Not Revise Regulatory Guide 1.163**

Under this alternative, the NRC would not revise this guidance, and the original version of this regulatory guide would continue to be the available guidance. This alternative is considered the baseline or "no-action" alternative and, as such, involves no value or impact considerations. However, this alternative would not provide the licensees with the current staff positions on the approved Revision 2-A of the NEI TR 94-01 guidance for implementing an acceptable performance-based leak-test program, leakage-rate test methods, procedures, and analyses that they may use to comply with the performance-based Option B in Appendix J to 10 CFR Part 50.

### Alternative 2: Revise Regulatory Guide 1.163

Under this alternative, the NRC would revise Regulatory Guide 1.163 to endorse NEI TR 94-01, Revision 2-A with conditions.

One benefit of this action is that it would allow licensees to extend the Type A ILRT surveillance interval up to 15 years based on past performance and other requirements. In addition, updating Regulatory Guide 1.163 also provides licensees with a consistent approach to implementing an acceptable performance-based leak-test program, leakage-rate test methods, procedures, and analyses that they may use to comply with the performance-based Option B in Appendix J to 10 CFR Part 50.

The cost to the NRC would be the one-time cost of issuing the revised regulatory guide (which is expected to be relatively small), and applicants would incur little or no cost.

### **Conclusion**

Based on this regulatory analysis, the staff recommends that the NRC revise Regulatory Guide 1.163. The proposed action will provide licensees with a consistent approach to implementing an acceptable performance-based containment leak-test program that they may use to comply with Option B in Appendix J to 10 CFR Part 50.

## REFERENCES<sup>1</sup>

1. NEI TR 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 0, Nuclear Energy Institute, Washington, DC, July 26, 1995.<sup>2</sup>
2. NEI TR 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 2, Nuclear Energy Institute, Washington, DC, August 2007.
3. Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," U.S. Nuclear Regulatory Commission, Washington, DC, September 1995.
4. Final Safety Evaluation Report, "Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) 94-01, Revision 2, 'Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J,' and Electric Power Research Institute (EPRI) Report No. 1009325, Revision 2, August 2007, 'Risk Impact Assessment of Extended Integrated Leak-Rate Test Intervals,'" U.S. Nuclear Regulatory Commission, Washington, DC, June 25, 2008.
5. NEI TR 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 2-A, Nuclear Energy Institute, Washington, DC, October 2008.
6. RIS 2008-27, "Staff Position on Extension of the Containment Type A Test Interval beyond 15 Years under Option B of Appendix J to 10 CFR Part 50," U.S. Nuclear Regulatory Commission, Washington DC, December 8, 2008. ADAMS Accession no. ML0800203941

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<sup>1</sup> Publicly available NRC published documents such as Regulations, Regulatory Guides, NUREGs, and Generic Letters listed herein are available electronically through the Electronic Reading room on the NRC's public Web site at: <http://www.nrc.gov/reading-rm/doc-collections/>. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room (PDR) at 11555 Rockville Pike, Rockville, MD; the mailing address is USNRC PDR, Washington, DC 20555; telephone 301-415-4737 or (800) 397-4209; fax (301) 415-3548; and e-mail [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov).

<sup>2</sup> Copies of the non-NRC documents included in these references may be obtained directly from the publishing organization.