



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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June 14, 2019

MEMORANDUM TO: Brian E. Thomas, Director  
Division of Engineering  
Office of Nuclear Regulatory Research

FROM: Mirela Gavrilas, Director **/RA/**  
Division of Safety Systems  
Office of Nuclear Reactor Regulation

SUBJECT: RESULTS OF PERIODIC REVIEW OF REGULATORY GUIDE  
(RG) 1.163, PERFORMANCE-BASED CONTAINMENT LEAK-  
TEST PROGRAM

This memorandum documents the US Nuclear Regulatory Commission (NRC) periodic review of regulatory guide (RG) 1.163, "Performance-Based Containment Leak-Test Program." The RG was initially published in September 1995 and describes what actions a licensee must perform to be allowed to voluntarily adopt Option B of 10 CFR 50 Appendix J. As discussed in Management Directive 6.6, "Regulatory Guides," the NRC staff reviews RGs approximately every 10 years to ensure that the RGs continue to provide useful guidance. Documentation of the NRC staff review is enclosed.

Based on the results of the periodic review, the staff concludes that a revision to RG 1.163 Revision 0 is warranted, as resources permit. A revision of RG 1.163 would eliminate the need for licensees to reference more than one revision of the industry guidance document NEI 94-01 as conditions specified in the staff safety evaluations associated with NEI 94-01 Revision 2 and Revision 3 would be consolidated with some possibly being relaxed. The staff plans to develop a draft guide by the third quarter of CY 2020, and issue it for public comment by the first quarter of CY 2021.

Enclosure:  
As stated

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PROGRAM Dated: June 14, 2019

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**NRR-106**

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DATE	5 / 30 /19	5 / 30 /19	6 / 5 /19	6 / 14 /19

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**Regulatory Guide Number:** 1.163, Revision 0

**Title:** Performance-Based Containment Leak-Test Program

**Office/Division/Branch:** NRR/DSS/SCPB

**Technical Lead:** Jerome Bettle

**Staff Action Decided:** Revise

**1. What are the known technical or regulatory issues with the current version of the regulatory guide (RG)?**

The U.S. Nuclear Regulatory Commission (NRC) staff has not identified any technical issues with RG 1.163, Revision 0, "Performance-Based Containment Leak-Test Program," issued September 1995. Licensees still using Revision 0 may continue to do so. However, those licensees choosing to use more recent industry guidance documents and further extend testing intervals need to submit a complex amendment. This presents a regulatory issue as it detracts from the NRC staff's ability to provide efficient licensing reviews.

Option B, "Performance-Based Requirements," of Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," requires the programs section of the plant technical specifications (TS) to identify the guidance used in establishing a reactor's primary containment leakage testing program. The NRC originally issued RG 1.163, Revision 0, in 1995 to endorse Nuclear Energy Institute (NEI) Technical Report NEI 94-01, "Industry Guideline for Implementing Performance Based Option of 10 CFR Part 50, Appendix J," Revision 0, July 1995 (ADAMS Accession No. ML11327A025). Since then, NEI issued Revision 2-A (ADAMS Accession No. ML100620847) in 2008, which includes provisions for extending the maximum performance-based Type A test (integrated leakage rate test) interval to 15 years. In 2012, NEI issued Revision 3-A, (ADAMS Accession No. ML12221A202) in July 2012 which added guidance for extending Type C (containment isolation valve) maximum intervals for local leak rate tests to 75 months.

The NRC previously initiated a revision to RG 1.163 to endorse NEI 94-01, Revision 2-A, and issued draft regulatory guide DG-1220 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML090490183) in 2009 for public comment. However, just before the NRC planned to issue RG 1.163, Revision 1, NEI submitted Revision 3 of NEI 94-01 for NRC staff review. This revision provided for extending Type C local leak rate test intervals of containment isolation valves from a maximum of 60 months to a maximum of 75 months. Therefore, the NRC did not issue RG 1.163, Revision 1, and the staff commenced a review of NEI 94-01, Revision 3, with the intent to consolidate the reviews. While this review proceeded, some licensees submitted license amendment requests to change their TS to reference NEI 94-01, Revision 2-A.

In its safety evaluation (SE) for NEI 94-01, Revision 2 (ADAMS Accession No. ML081140105), the NRC staff specified limitations and conditions on the use of NEI 94-01, Revision 2. The limitations and conditions of the SE included in the

consolidated NEI 94-01 Revision 2-A would also apply to Revision 3-A. However, NEI inadvertently did not incorporate them into NEI 94-01, Revision 3 and the NRC staff inadvertently did not include them as carried forward limitations and conditions in the SE for NEI 94-01 Revision 3 to be incorporated by inclusion when reissued as the combined document NEI 94-01 Revision 3-A. This resulted in confusion for licensees as to which document(s) the plant TS would need to reference as the guidance used for implementing a primary containment performance-based leakage testing program.

The NRC staff communicated this issue in a letter to NEI dated August 20, 2013 (ADAMS Accession No. ML13192A394). The letter suggested NEI consider an update to NEI 94-01 to incorporate the conditions and limitations identified in the staff SE to allow for a less confusing and more streamlined endorsement.

NEI has not submitted a subsequent revision of NEI 94-01 for NRC staff review. However, many licensees interested in extending test intervals have requested and been granted license amendments to change their TS to reference NEI 94-01, Revision 3-A, with the conditions and limitations listed in the staff SE incorporated into Revision 2-A. This has been a cumbersome and confusing arrangement.

With no NEI 94-01, Revision 3, expected, the NRC could consolidate the guidance into regulatory positions in RG 1.163, Revision 1, avoiding the need to reference a confusing combination of two revisions of NEI 94-01. In addition, given the NRC's experience issuing license amendments in this manner, some of the conditions may no longer be needed or could be clarified to streamline future staff and licensee interaction and reduce the time to process associated license amendment requests.

Adoption of a different guidance document for a licensee's primary containment leakage testing program is a voluntary action, and the current practice, although confusing and thus inefficient, has allowed for the new guidance to be adopted. The staff should pursue a revision to RG 1.163, as resources permit, as it would be an efficiency improvement to a regulatory process that has slowed but not prevented approval of associated license amendment requests.

Office of Nuclear Reactor Regulation (NRR) branches responsible for containment (currently the Containment and Plant Systems Branch), American Society of Mechanical Engineers Boiler and Pressure Vessel Code Sections IWE and IWL primary containment inservice inspection programs (currently the Structural Engineering Branch), and probabilistic risk assessment (currently the Probabilistic Risk Assessment Licensing Branch) have established the conditions to incorporate into RG regulatory positions.

**2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?**

The NRC has granted more than half the currently operating nuclear units license amendments to adopt the more recent industry guidance. The adoption of portions of two revisions of a guidance document becomes complicated and often has required additional license amendment processing time to ensure accuracy. Updating RG 1.163 will result in more efficient reviews by ensuring the desired information is exchanged and the appropriate TS wording is incorporated. The staff expects another 20 to 25 license amendments over the next several years that could benefit from a revision to RG 1.163.

**3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?**

The NRC would require approximately 0.4 FTE of NRC staff resources to accomplish the revision of RG 1.163 over a period of 1 to 1.5 years, including to prepare the draft guide, coordinate the review by affected branches, and resolve comments from the public review. The staff does not anticipate the need for contractor support.

**4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Revise. The new revision will consider the issues address in DG-1220 and the comments received on DG-1220.

**5. Provide a conceptual plan and timeframe to address the issues identified during the review.**

The staff plans to develop a draft guide by the third quarter of calendar year 2020 and issue it for public comment by the first quarter of calendar year 2021.

**NOTE: This review took place in May 2019 and reflects the staff's plans as of that time. These plans are tentative and subject to change.**