

U.S. NUCLEAR REGULATORY COMMISSION

Notice of Issuance of Regulatory Guide

AGENCY: Nuclear Regulatory Commission.

ACTION: Issuance, Availability of Regulatory Guide 1.45, Revision 1.

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SUPPLEMENTARY INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is issuing a revision to an existing guide in the agency's "Regulatory Guide" series. This series was developed to describe and make available to the public information such as methods that are acceptable to the NRC staff for implementing specific parts of the agency's regulations, techniques that the staff uses in evaluating specific problems or postulated accidents, and data that the staff needs in its review of applications for permits and licenses.

Revision 1 of Regulatory Guide 1.45, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage," was issued with a temporary identification as Draft Regulatory Guide DG-1173. General Design Criterion (GDC) 14, "Reactor Coolant Pressure Boundary," as set forth in Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10, Part 50, of the *Code of Federal Regulations* (10 CFR Part 50), "Domestic Licensing of Production and Utilization Facilities," requires that the reactor coolant pressure boundary (RCPB) shall be designed, fabricated, erected, and tested so as to have an extremely low

probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. As a result, these nuclear components are normally designed to the criteria established in Section III of the Boiler and Pressure Vessel Code promulgated by the American Society of Mechanical Engineers.

During the design phase, degradation-resistant materials are normally specified for reactor coolant system (RCS) components. However, materials can degrade as a result of the complex interaction of the materials, the stresses they encounter, and the normal and upset operating environments in which they are used. Such material degradation could lead to the leakage of the reactor coolant. Consequently, GDC 30, "Quality of Reactor Coolant Pressure Boundary," of Appendix A to 10 CFR Part 50 requires that means shall be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage. Additionally, 10 CFR 50.55a, "Codes and Standards," requires the performance of inservice inspection and testing of nuclear power plant components. Thus, the concept of defense-in-depth is used to provide assurance that structural integrity of the RCPB is maintained. This guide describes methods that the staff of the NRC considers acceptable for implementing these requirements, with regard to selecting reactor coolant leakage detection systems, monitoring for leakage, and responding to leakage. This guide applies to light-water cooled reactors.

II. Further Information

In June 2007, DG-1173 was published with a public comment period of 60 days from the issuance of the guide. The public comment period closed on August 28, 2007. The staff's responses to the public comments are located in the NRC's Agencywide Documents Access and Management System (ADAMS), Accession Number ML073200289.

Electronic copies of Regulatory Guide 1.45, Revision 1 are available through the NRC's public Web site under "Regulatory Guides" at <http://www.nrc.gov/reading-rm/doc-collections/>. In addition, regulatory guides are available for inspection at the NRC's Public Document Room (PDR), which is located at Room O-1F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852-2738. The PDR's mailing address is USNRC PDR, Washington, DC 20555-0001. The PDR can also be reached by telephone at (301) 415-4737 or (800) 397-4209, by fax at (301) 415-3548, and by e-mail to pdrr@nrc.gov.

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Dated at Rockville, Maryland, this 21st day of May, 2008.

For the Nuclear Regulatory Commission.

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