

J. McKnight
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

April 20, 1998

NRC INFORMATION NOTICE 98-13: POST-REFUELING OUTAGE REACTOR PRESSURE VESSEL LEAK TESTING BEFORE CORE CRITICALITY

Addressees

All holders of operating licenses for nuclear power reactors except those that have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees of the requirement to complete pressure tests and leak tests of the reactor pressure vessel (RPV) before core criticality. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Background

Under the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Class 1 and 2 leakage tests provide a level of defense-in-depth for detecting pressure boundary leakage. From a safety perspective, performing this test using nuclear heat defeats the intended purpose of ensuring the integrity of the RPV as a fission product barrier.

A December 1995 rule change to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR Part 50), Appendix G, Section IV.A.2.d, clarified the staff position as follows: "Pressure tests and leak tests of the reactor vessel that are required by Section XI of the ASME Code must be completed before the core is critical." The final rule was published in the Federal Register on December 19, 1995. In addition, the Federal Register notice referenced a letter to Messrs. Reynolds and Stenger of the Nuclear Utility Backfitting and Reform Group (NUBARG) from James M. Taylor, NRC Executive Director for Operations, dated February 2, 1990, in which Mr. Taylor discussed the explicit prohibition of using nuclear heat to perform pressure and leak tests (Accession Number 9002120362).

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Description of Circumstances

On June 22, 1997, the licensee for Quad Cities Station performed the required ASME Code, Section XI leak test of the RPV following Unit 2 criticality and startup from a refueling outage. The reactor was at approximately 12-percent power. On October 1, 1997, while reading Appendix G for guidance on a separate issue, the licensee discovered that it had violated the requirement to complete pressure and leak testing before the core is taken critical.

In December 1997, a Region III inspector reviewed (1) ASME Code Class 1 system pressure tests for the Quad Cities Units 1 and 2 refueling outage 14 and (2) problem identification forms (Inspection Report 50-254/97-27, Accession Number 9803170418). The licensee had previously documented the violation that took place on June 22, 1997, of Appendix G requirements in one of the problem identification reports. The Inspector found that the visual VT-2 examinations of the Unit 2 drywell area required by the ASME Code were conducted in a very short time. In an effort to keep exposure time to a minimum, licensee personnel covered very large examination areas in a very short time (e.g., 50 examination areas in 12 minutes). The short examination time called into question the adequacy of the visual VT-2 examinations.

The NRC and the licensee discussed apparent violations during an open, predecisional enforcement conference that took place on January 9, 1998. On March 12, 1998, the NRC issued a Notice of Violation and Proposed Imposition of Civil Penalty in the amount of \$330,000 for violations of Appendix G to 10 CFR Part 50, 10 CFR 50.59, and Technical Specification surveillance requirements.

Discussion

This issue is of significant concern because licensees should recognize that the intent of performing the ASME Code pressure and leak tests before the reactor is taken critical is to ensure the integrity of the RPV without using nuclear heat. The staff's position has been, and continues to be, that performing pressure and leak tests after the core is critical is unacceptable. This point was clarified in the December 1995 rule change.

This information notice requires no specific action or written response. However, recipients are reminded that they are required to consider industry-wide operating experience (including NRC information notices) when practical and when setting goals and performing periodic evaluations under 10 CFR Section 50.65, "Requirement for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Jack W. Roe, Acting Director
 Division of Reactor Program Management
 Office of Nuclear Reactor Regulation

Technical contacts: Andrea D. Lee, NRR
 301-415-2735
 E-mail: adw1@nrc.gov

Melvin Holmberg, RIII
 630-829-9748
 E-mail: msh@nrc.gov

Attachment: List of Recently Issued NRC Information Notices

Tech Editor had concurred on 3/18/98

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DATE	3/3/98		3/3/98	3/12/98		3/25/98	3/16/98	4/13/98 <i>4/15</i>

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**LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES**

Information Notice No.	Subject	Date of Issuance	Issued to
98-12	Licensees' Responsibilities Regarding Reporting and Follow-up Requirements for Nuclear-Powered Pacemakers	4/3/98	All U.S. Nuclear Regulatory Commission nuclear pacemaker licensees
98-11	Cracking of Reactor Vessel Internal Baffle Former Bolts in Foreign Plants	3/25/98	All holders of operating licensing for pressurized-water reactors (PWRs) except those who have ceased operation and have certified that fuel has been permanently removed from the reactor vessel.
95-52, Supp.1	Fire Endurance Test Results for Electrical Raceway Fire Barrier Systems Constructed From 3M Company Interam Fire Barrier Materials	3/17/98	All holders of operating licenses for nuclear power reactors except those who have permanently ceased operation and have certified that fuel has been permanently removed from the reactor vessel.
98-10	Probable Misadministrations Occurring During Intravascular Brachytherapy With The Novoste Beta-Cath System	3/9/98	All Medical Licensees
98-09	Collapse Of An Isocam II Dual-Headed Nuclear Medicine Gamma Camera	3/5/98	All Medical Licensees
98-08	Information Likely To Be Requested If An Emergency Is Declared	3/2/98	All Parts 30, 40, 70, 72, and 76 licensees and certificate holders required to have a Nuclear Regulatory Commission-approved Emergency Plan.
98-07	Offsite Power Reliability Challenges from Industry Deregulation	2/27/98	All holders of operating licensees for nuclear power reactors

OL = Operating License
 CP = Construction Permit

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In addition, there was a lack of knowledge of the change in the applicable regulation which suggests a weakness in the method for disseminating rule changes to the onsite staff. This raises a larger concern with regard to how licensees with multiple sites ensure that their sites receive information each time a rule is changed. It should also be noted that no formal onsite staff review occurred prior to the decision to perform the pressure test after criticality.

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