

January 30, 2009

EGM-09-001

MEMORANDUM TO: Samuel J. Collins, Regional Administrator, Region I
Luis A. Reyes, Regional Administrator, Region II
James L. Caldwell, Regional Administrator, Region III
Elmo E. Collins, Regional Administrator, Region IV
Eric J. Leeds, Director, Office of Nuclear Reactor Regulation
Michael R. Johnson, Director, Office of New Reactors
Charles L. Miller, Director, Office of Federal and State Materials and
Environmental Management Programs
Michael F. Weber, Director, Office of Nuclear Material Safety and
Safeguards
Roy P. Zimmerman, Director, Office of Nuclear Security
and Incident Response

FROM Cynthia A. Carpenter, Director
Office of Enforcement /RA/

SUBJECT: ENFORCEMENT GUIDANCE MEMORANDUM - DISPOSITIONING
VIOLATIONS OF NRC REQUIREMENTS FOR OPERABILITY OF
GASEOUS MONITORS FOR REACTOR COOLANT SYSTEM
LEAKAGE DETECTION

Purpose:

The purpose of this Enforcement Guidance Memorandum (EGM) is to provide guidance for dispositioning violations of NRC requirements for the operability of gaseous radioactivity monitors for Reactor Coolant System (RCS) leakage detection.

Background:

In order to meet General Design Criterion (GDC) 30, "Quality of reactor coolant pressure boundary," of Appendix A to Title 10 of the *Code of Federal Regulations* Part 50 (10 CFR 50), licensees typically install and operate RCS leakage detection equipment at their power reactors because the equipment can be used to detect reactor coolant pressure boundary (RCPB) leakage. A typical RCS leakage detection system consists of a combination of a containment atmosphere particulate radioactivity monitoring system, a containment atmosphere gaseous radioactivity monitoring system, containment sump level and sump pump instrumentation, or containment cooler condensate monitoring instrumentation.

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Containment atmosphere gaseous radioactivity monitoring systems measure RCS leakage indirectly by detecting airborne radioactivity released from RCS leakage. Response time is the length of time required for a containment atmosphere gaseous radioactivity monitoring system to detect a given volume of RCS leakage. Response time is dependant on RCS radioactivity concentration, as well as other variables. For a given volume of leakage, with all other variables held constant, a higher RCS radioactivity concentration will yield a shorter response time for containment atmosphere gaseous radioactivity monitoring systems. The design analyses for containment atmosphere gaseous radioactivity monitoring systems used in the licensing bases for most plants typically assume a RCS radioactivity concentration approximately equivalent to 0.1 percent failed fuel in the core. Improvements in fuel cladding integrity and RCS chemistry controls have significantly reduced RCS radioactivity concentration at most plants. As a result, the containment atmosphere gaseous radioactivity monitors for operating units may have longer response times than they would with 0.1 percent failed fuel in the core because the actual RCS radioactivity concentration is less than it would be with 0.1 percent failed fuel in the core.

Most plants have Technical Specifications (TS) Limiting Conditions for Operation (LCO) requirements for containment atmosphere gaseous radioactivity monitoring systems used as part of RCS leakage detection equipment. The TS requirements for containment atmosphere gaseous radioactivity monitoring systems' response times are based on the design analysis that is part of a plant's licensing basis. If the monitors fail to meet these requirements, the monitors are inoperable. When the monitors are inoperable the licensee is required to take remedial actions as permitted by their TS or to shut down the reactor.

Information Notice (IN) 2005-24, "Nonconservatism in Leakage Detection Sensitivity" (ADAMS Accession No. ML051780073) communicated the issue created by differences between actual and assumed RCS radioactivity concentrations to all licensees. The purpose of IN 2005-24 was to have licensees review information related to problems with containment atmosphere gaseous radioactivity monitors used as part of RCS leakage detection equipment and consider appropriate actions as applicable to their plants. Information Notices do not require any action by licensees.

The NRC intends to use enforcement discretion described in this EGM, integrated with the license amendment process, to resolve the issue created by differences between actual and assumed RCS radioactivity concentrations.

Enforcement discretion related to containment atmosphere gaseous radioactivity monitors TS requirements is appropriate because the longer response times of those monitors is of very low safety significance. The containment atmosphere gaseous radioactivity monitors would still be able to detect degradation in the Reactor Coolant Pressure Boundary (RCPB) long before components fail in a manner that would affect plant safety. Additionally, plants also have multiple diverse and redundant methods available to detect RCS leakage and to provide licensees with a means to detect significant RCPB degradation and to take appropriate action to ensure the continued protection of public health and safety. Finally, nuclear power plants are designed to provide adequate core cooling following postulated loss-of-coolant accidents up to and including a break equivalent in size to the double-ended rupture of the largest pipe in the RCS. This design feature, coupled with the extremely low likelihood of an undetected crack growth resulting in a loss-of-coolant accident, leads the NRC to conclude that the risk significance of this issue is very low.

Actions:**Immediate action:**

- a. In accordance with the NRC Enforcement Policy, Section VII.B.6, "Violations Involving Special Circumstances", the NRC will exercise enforcement discretion and not cite licensees for TS violations related to Gaseous Radioactivity Monitors being unable to detect a one gallon per minute (gpm) leak. Enforcement discretion is appropriate due to the very low safety significance of the issue and the fact that licensees have other methods available to detect RCS leakage. In order to receive this discretion, licensees shall enter this issue into their corrective action program.

Note: This EGM does not apply to cases in which Gaseous Radioactivity Monitors are unable to detect a 1 gpm leak in less than an hour due to incorrect installation of the monitor or other issues unrelated to a lower source term. This EGM also does not apply to the TS requirement concerning the operability of containment gaseous radioactivity monitors to isolate containment in order to minimize radioactivity releases to the environment due to an accident.

- b. Violations of other requirements (e.g., 10 CFR 50.59, 10 CFR 50, Appendix B, Criterion III or Criterion V, etc.) that may have contributed to the above TS violation will be considered for enforcement discretion under this EGM on a case-by-case basis. Regions should consult with the Office of Enforcement in those instances.
- c. Violations associated with this enforcement discretion do not require discussion at an Enforcement Panel and do not require assignment of an Enforcement Action (EA) tracking number, but shall be documented in an inspection report. The following or similar language should be included in the cover letter to the inspection report which discusses the violation.

"A violation of Technical Specifications [insert the applicable TS number] was identified. Because the violation was identified during the discretion period described in Enforcement Guidance Memorandum 09-001 the NRC is exercising enforcement discretion in accordance with Section VII.B.6, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and is, therefore, not issuing enforcement action for this violation."

Long-term action:

- a. A proposed Technical Specifications Task Force (TSTF) Traveler (TSTF-513) "Revise Operability Requirements and Actions for RCS Leakage Instrumentation," was submitted to the NRC staff by the industry on November 14, 2008 for Pressurized Water Reactors (PWRs), and another TSTF is anticipated in early 2009, for Boiling Water Reactors (BWRs). The generic resolution of this issue will include development of model License Amendment Requests (LARs), model safety evaluations, and model no-significant-hazards consideration determinations using the NRC Consolidated Line Item Improvement Process (CLIIP), issuance of Notices of Availability (NOAs) for the models, and the timely processing of license amendments by the NRC staff.

- b. In order to continue receiving this enforcement discretion, affected licensees shall submit a LAR, which is accepted by the staff for review, within four months after the issuance of the Notice of Availability (NOA) applicable to a licensee's reactor type, (i.e., PWR or BWR). NRC will consider extending the four month period, on a case-by-case basis, with adequate justification from the licensee.
- c. This enforcement discretion will continue to be in place until NRC dispositions a licensee's LAR.

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