

December 20, 2012

EGM 11-003, Revision 1

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FROM: Roy P. Zimmerman, Director */RA/*  
Office of Enforcement

SUBJECT: ENFORCEMENT GUIDANCE MEMORANDUM 11-003,  
REVISION 1, DISPOSITIONING BOILING WATER REACTOR  
LICENSEE NONCOMPLIANCE WITH TECHNICAL  
SPECIFICATION CONTAINMENT REQUIREMENTS DURING  
OPERATIONS WITH A POTENTIAL FOR DRAINING THE  
REACTOR VESSEL

**PURPOSE:**

This enforcement guidance memorandum (EGM) provides guidance on how to disposition boiling water reactor (BWR) licensee noncompliance with technical specification (TS) containment requirements during operations with a potential for draining the reactor vessel (OPDRV). Immediate actions criteria during OPDRV activities are revised to specify a draindown time that will allow most routine activities to take place; to include corrections to not otherwise prohibit activities that are allowed under the plant's TS for licensees that have adopted the Alternate Source Term (10 CFR 50.67), to clarify the intent to ensure water level monitoring detects a draining event with sufficient time to meet EGM containment closure criteria during OPDRV activities and editorial clarifications that are consistent with the EGM guidance.

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**BACKGROUND:**

Certain safety systems must be operable during OPDRV activities to mitigate draindown events and to provide protection against untreated fission product release in the event that the reactor pressure vessel (RPV) water level drops and uncovers irradiated fuel. TS do not define the term OPDRV or identify specific plant actions that constitute OPDRV activities. Because a definition is not provided, the U.S. Nuclear Regulatory Commission (NRC) staff expects BWR licensees to use the plain language meaning of the OPDRV wording for determining applicable TS requirements. This means that any activity that could potentially result in draining or siphoning the RPV water level below the top of the fuel, without taking credit for mitigating measures, would be an OPDRV activity.

In 2010, the NRC cited Clinton Power Station for violating Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, Tests and Experiments," for making procedure changes that interpreted the term OPDRV. Based on these procedure changes, the licensee conducted activities that they had previously considered OPDRV activities without having to comply with OPDRV TS requirements. Since that time, the NRC staff has learned that many other BWR licensees have similarly changed their plant procedures to interpret the plain language meaning of OPDRV in a way that restricts the applicability of OPDRV TS requirements or that uses compensatory measures to avoid having to comply with the TS requirements. For example, many licensees have selected a minimum size for an opening in the RPV located below the top of the fuel in order for a maintenance operation to qualify as an OPDRV activity. The selected hole size is large enough to allow the licensee to conduct under vessel work, such as control rod drive replacement, without having secondary containment<sup>1</sup>, standby gas treatment, or an emergency core cooling system operable as required by TS. Licensees would typically include a requirement in their procedures to conduct these activities with the reactor cavity flooded, have inventory replacement capability, and include physical barriers as compensatory measures in order to be able to conclude that such activities would not have the potential to drain the reactor vessel. However, TS do not allow for the application of compensatory measures as a means of avoiding entry into TS limiting conditions for operation.

On July 27, 2011, the NRC staff and the Boiling Water Reactors Owners Group (BWROG) held a public meeting in Rockville, MD (Agencywide Documents Access and Management System (ADAMS) Accession Number ML112220018) to discuss OPDRV TSs requirements. The purpose of the meeting was to begin a dialog toward developing a common understanding of what constitutes an OPDRV activity and to consider whether the staff needs to develop additional guidance (e.g., an improvement to the Standard Technical Specifications (STS)) to provide more clarity to the term. At the meeting, BWROG presented the industry position that any operation that licensees can mitigate before uncovering irradiated fuel should not be considered an OPDRV activity. The NRC staff iterated that the plain language meaning of OPDRV activities applies. The NRC staff considers OPDRV activities to be any activity that

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<sup>1</sup>The majority of licensed BWR containment designs are secondary containment shutdown plants; therefore, the criteria and discussion below is written for this plant design by referring to "secondary containment." For the other BWR containment designs, "secondary containment" is understood to mean "primary containment" for a primary containment shutdown plant and "primary and secondary containment" for a primary and secondary containment shutdown plant.

could result in the draining or siphoning of the RPV water level below the top of the fuel, without crediting the use of mitigating measures to terminate the uncovering of fuel.

In preparation for recent meetings with the BWROG the staff performed a review of past licensing positions and staff interactions with the industry related to OPDRV practices. This review showed varied staff actions and communications resulting in inconsistent implementation of the plain language meaning of OPDRV. Accordingly, the staff intends to initiate an improvement to STS for BWRs that will allow a graded approach to OPDRV requirements.

#### Basis for Granting Enforcement Discretion

To improve regulatory clarity for BWR plants in the interim and to allow implementation of specific interim actions as an alternative to full compliance with plant technical specifications while this improvement is under development, the staff will exercise limited enforcement discretion.

The NRC staff intends to use the enforcement discretion described in this EGM, integrated with the license amendment process, to resolve TS compliance issues created by the lack of clear regulatory guidance on the meaning of OPDRV and inconsistent licensee implementation of the plain language meaning of the term OPDRV.

The NRC considers enforcement discretion related to secondary containment operability during Mode 5 OPDRV activities appropriate because the associated interim actions necessary to receive the discretion ensure an adequate level of safety by requiring licensees' immediate actions to (1) adhere to the NRC plain language meaning of OPDRV activities, (2) meet the requirements which specify the minimum makeup flow rate and water inventory based on OPDRV activities with long drain down times, (3) ensure that adequate defense in depth is maintained to minimize the potential for the release of fission products **with secondary containment not operable** by (a) monitoring RPV level to identify the onset of a loss of inventory event, (b) maintaining the capability to isolate the potential leakage paths, (c) prohibiting Mode 4 (cold shutdown) OPDRV activities, and (d) prohibiting movement of irradiated fuel with the spent fuel storage pool gates removed in Mode 5, and (4) ensure that licensees follow all other Mode 5 TS requirements for OPDRV activities. During the time period of enforcement discretion, the staff will work with the BWROG to develop an improvement to the STS that licensees will be able to adopt through the license amendment process.

To be eligible for enforcement discretion, licensees must meet the minimum criteria established in this EGM as described below. In addition, each licensee that receives the discretion must submit a license amendment request (LAR) to resolve the issue for its plant which the NRC staff LAR acceptance review finds acceptable in accordance with LIC-109, "Acceptance Review Procedures." The generic solution will be a generic change to the STS, and the NRC will publish a notice of availability (NOA) for the TSs solution in the *Federal Register*. Each licensee that receives discretion must submit its amendment request within 4 months of the NRC staff's issuance of the NOA. Licensees may submit LARs to adopt the NRC-approved approach or to propose an alternative approach for their plants.

**ACTIONS:****Immediate Actions**

In accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy, the agency will exercise enforcement discretion and will not cite licensees for TS violations related to the conduct of OPDRV activities with secondary containment inoperable. Enforcement discretion will only be granted for outages occurring through December 31, 2013. Enforcement discretion is appropriate because the issue has low safety significance since licensees must implement compensatory measures to provide an adequate level of safety when using the discretion provided herein. The NRC will exercise enforcement discretion only if the licensee demonstrates that it has met the following criteria during an OPDRV activity:

1. The licensee shall consider any activity that could potentially result in draining or siphoning the RPV water level below the top of the fuel, **including operations involving aligning and realigning plant systems prior to achieving steady-state water level control, without taking credit for mitigating measures, to be an OPDRV activity. The addition and removal of small volumes of water inventory from the RPV, for example control rod drive cooling water, is considered steady-state water level control and not an OPDRV provided the instrumentation and valves for automatic isolation of the draindown path remain available.** The licensee shall declare (log) that they are in an OPDRV and document the actions being taken to ensure water inventory is maintained and defense-in-depth criteria are in place prior to entering the OPDRV activity.
2. The licensee shall meet the following requirements, which specify the minimum makeup flow rate and water inventory:
  - a) During OPDRV activities the water level shall be equal to or greater than [23]<sup>2</sup> feet (RHR – High Water Level) over the top of the RPV flange and the gate to the spent fuel storage pool and to the upper containment cavity to dryer pool (as applicable) shall be removed.
  - b) During OPDRV activities, at least one safety-related pump shall be available (preferably aligned to the division with the required operable EDG) and shall be aligned to a makeup water source with the capability to inject water equal to, or greater than, the maximum potential leakage rate from the RPV for a minimum time period of 4 hours. If at any time the water inventory requirement is not met or inventory makeup capability is lost, then actions shall be initiated to immediately suspend OPDRV activities.
  - c) During OPDRV activities, the time to drain down the water inventory from the RHR- High Water Level to the top of the RPV flange shall be greater than 24 hours based on the calculated maximum leak rate for OPDRV activities.

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<sup>2</sup> Use the plant-specific TS allowable value for RHR – High Water Level (23 feet is a typical value).

3. OPDRV activities shall be performed, to the maximum extent practicable, in a manner that maintains defense in depth against the release of fission product inventory. The following limitations shall apply:
  - a) OPDRV activities are prohibited during Mode 4 with secondary containment inoperable.
  - b) During OPDRV activities movement of [recently]<sup>3</sup> irradiated fuel is prohibited with the spent fuel storage pool gates removed in Mode 5.
  - c) The capability to isolate the potential leakage path during OPDRV activities before the water inventory reaches the RPV flange shall be maintained.
  - d) At least two independent means of monitoring the RPV water level shall be available for identifying the onset of loss of inventory events during an OPDRV activity; at least one of these shall be an alarming indicator in the control room. One of the two indications may be by direct observation of the RPV water level, provided that such observation is continuous and the observer is in direct contact with the control room via a connection that does not require AC power. It is not necessary to modify existing instrumentation to provide the required indication (e.g., recalibration to cold-shutdown conditions). The RPV water level monitoring capability shall ensure that a draining event is detected with sufficient time to meet 3.e below.
  - e) The RPV water level monitoring capability shall ensure that a draining event is detected with sufficient time to (1) close at least one secondary containment access door in each access opening before water reaches the top of the RPV flange and (2) close secondary containment equipment hatches before water reaches the top of the RPV flange.
4. Licensees must follow all other TS Applicability and Action requirements for Mode 5 and Mode 5 OPDRV activities. If a licensee has a TS requirement that is more restrictive or conservative than the criteria stated herein, it must follow its TSs.
  - a) Violations of other requirements (e.g., 10 CFR 50.59 and Criterion III, "Design Control," or Criterion V, "Instructions, Procedures, and Drawings," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities") that may have contributed to the above TS violation may 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.

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<sup>3</sup> The bracketed term [recently] applies to licensees that have adopted the Alternative Source Term (10 CFR 50.67) and is bracketed here to maintain the convention applied in standard technical specifications (STS) to show that a plant-specific licensing basis determines the use of the bracketed STS language. Technical specifications under 10 CFR 50.67 require secondary containment to be operable during movement of "recently irradiated fuel assemblies".

- b) Violations associated with this enforcement discretion do not require discussion at an enforcement panel. They do require, however, the assignment of an enforcement action tracking number, and they shall be documented in an inspection report. The cover letter to the inspection report that discusses the violation should include the following or similar language:

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 11-003, the NRC is exercising enforcement discretion in accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and, therefore, will not issue enforcement action for this violation, subject to a timely license amendment request being submitted.

#### Long-Term Actions

1. The BWR Owners Group has indicated that they intend to submit a proposed Technical Specifications Task Force (TSTF) Traveler that revises BWR/4 and BWR/6 OPDRV STS requirements for staff review. The generic resolution of this issue will include the development of a clear meaning of the term OPDRV within TS, additional clarification of the TS requirements for Mode 4 and Mode 5 OPDRV activities, model license amendment requests (LARs), model safety evaluations, model no significant hazards consideration determinations using the NRC consolidated line-item improvement process, issuance of NOAs for the models, and the timely processing of license amendments by the NRC staff.

2. As iterated in the immediate actions, enforcement discretion will only be granted for outages occurring through December 31, 2013. To continue receiving this enforcement discretion, affected licensees shall submit, within 4 months after the issuance of the NOA, an LAR that the staff will accept for review. The NRC will consider extending the 4-month period on a case-by-case basis with adequate justification from the licensee. This enforcement discretion will continue to be in place until the NRC dispositions a licensee's LAR.

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