

## Emergency Preparedness Frequently Asked Question (EPFAQ)

**EPFAQ Number:** 2019-02

**Date Accepted for Review:**

**Originator:** David Young

**Organization:** NEI

**Relevant Guidance:** This question concerns NEI 99-01, *Development of Emergency Action Levels for Non-Passive Reactors*, Revision 6

**Applicable Section(s):**

- Containment Potential Loss threshold 2.A, “Primary containment flooding required.”

**Status:**

**QUESTION OR COMMENT:**

Background

Refer to EPFAQ 2019-04; this question is a revision of question 02. A conforming change was added – see blue text below.

Question 2019-02-02

In Table 9-F-2, “BWR EAL Fission Product Barrier Table,” Containment Barrier Potential Loss threshold 2.A, states, “Primary containment flooding required.” This threshold, appearing in NEI 99-01 Revision 6, dated November 2012, was based on guidance in EPG/SAG Revision 2. The threshold was subsequently updated by EPFAQ 2015-004 to reflect changes incorporated into EPG/SAG Revision 3; the revised threshold is, “SAG entry is required.”

In Revision 2, primary containment flooding was required when core cooling was determined to be inadequate. These conditions also served as transition criteria for exiting the EPGs and entering the SAGs. In EPG/SAG Revision 3, the condition “primary containment flooding is required” was reached only after SAG entry and the decision to flood the primary containment had been thoroughly evaluated against a set of technical criteria. To address the variability in the timing of containment flooding, as permitted by Revision 3 strategy change, the containment barrier potential loss threshold was changed by EPFAQ 2015-004 such that it remained functionally equivalent to the threshold wording reflecting the Revision 2 strategy. The Containment barrier was considered potentially lost when adequate core cooling could no longer be assured and core damage was imminent. Within the context of EPGs, this point is best defined when operators are directed to enter a SAG (i.e., a threshold of “SAG entry is required”).

In EPG/SAG Revision 4, the containment flooding strategy was re-evaluated and modified to consider new insights related to quenching of fuel debris in the lower cavity. The flooding strategy was modified to permit the use of FLEX equipment to supply an initial high flow rate of water with a preferred injection point into the vessel and then reduce it to just enough to maintain debris coolability. This strategy preserves the hardened wetwell vent and provides for a longer-term use of the suppression pool to scrub radionuclides to reduce the offsite dose and land contamination. Thus, flooding of the containment is less of a preferred option early in

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severe accident progression and, in some sequences, may not be directed.

Since primary containment flooding may or may not be directed after entry into a SAG, as described in EPG/SAG Revision 4, the threshold approved in EPFAQ 2015-004 is no longer optimum (i.e., tying it to SAG entry). Can Primary Containment Potential Loss threshold 2.A be revised to reflect the operationally significant decision to flood the containment, which would restore the wording approved in NEI 99-01, Revision 6?

### PROPOSED SOLUTION:

Yes. Primary Containment Potential Loss threshold 2.A may be revised back to the original wording in NEI 99-01, Revision 6, "Primary containment flooding is required."

NOTE – The related change discussed in EPFAQ 2015-004 regarding the recommended use "SAG entry is required" for Fuel Clad Loss threshold 2.A is not affected by this question/answer.

Since containment venting could be performed as part of the SAG strategy described above, emergency classification scheme developers should also make the following conforming changes.

1. Revise Containment Barrier Loss Threshold 3.B to read, "Intentional primary containment venting per EOPs/SAGs"
2. Revise the associated Basis section to read:

"EOPs or SAGs may direct primary containment isolation valve logic(s) to be intentionally bypassed, even if offsite radioactivity release rate limits will be exceeded. Under these conditions with a valid primary containment isolation signal, the containment should also be considered lost if primary containment venting is actually performed. Intentional venting of primary containment for primary containment pressure or combustible gas control in the EOPs, or for any reason in the SAGs, to the secondary containment and/or the environment is a Loss of the Containment. Venting for primary containment pressure control when not in an accident situation (e.g., to control pressure below the drywell high pressure scram setpoint while in the EOPs) does not meet the threshold condition."

### Difference/Deviation Determination

As indicated in the "Relevant Guidance" entry, EPFAQ 2019-02 may be considered only by sites that have implemented NEI 99-01, Revision 6. The responses above promote alignment between BWR emergency operating procedures and emergency classification schemes; therefore, implementation of the guidance in this EPFAQ will improve the accuracy and timeliness of emergency classifications. Moreover, the responses will result in EAL interpretations that are consistent with the meaning and intent of NRC-approved EAL bases such that the classification of the addressed events/conditions would not be different from that approved by the NRC in a site-specific application. For this reason, it is reasonable to conclude that incorporation of the guidance from this EPFAQ into an NRC-approved site-specific scheme would be considered a "difference" in accordance with Regulatory Issue Summary (RIS) 2003-18, Supplement 2, Use of Nuclear Energy Institute (NEI) 99-01, "Methodology for Development

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of Emergency Action Levels," Revision 4, dated January 2003.

### **NRC RESPONSE:**

### **RECOMMENDED FUTURE ACTION(S):**

- INFORMATION ONLY, MAINTAIN EPFAQ
- UPDATE GUIDANCE DURING NEXT REVISION