

HCVS Guidance Inquiry

A. TOPIC: Severe Accident Multiple Unit Response

Inq. No.: HCVS-FAQ-10

Source document: NEI 13-02 Revision 1

Section: Appendix I

B. DESCRIPTION:

NEI 13-02 Revision endorsed by JLD-ISG-2015-01 allows the use of Severe Accident Water Addition (SAWA) as part of the Phase 2 response to the order. Neither NRC Order EA-13-109, nor the endorsed guidance of NEI 13-02, Revision 1, provides direction for addressing simultaneous severe accident responses at multiple units at the same site.

C. PROPOSED ANSWER: (Include additional pages if necessary. Total pages: 2)

Though the occurrence of simultaneous ELAP events is possible because of a common Beyond Design Basis External Event (BDBEE) initiator, it is improbable that the accident progression timing will be identical among the affected units (e.g., simultaneous failure of all injection at all affected units at a site is not likely). Based on the following inputs and assumptions:

1. It is possible that, as at Fukushima Daiichi (and Daini), an Extended Loss of AC Power will occur at more than one unit at a multiple unit site and is a specific consideration of NRC Order EA-12-049.
2. ELAP/LUHS can occur at more than one unit at a multi-unit site.
3. Each BWR MK I and II, under the assumptions of NRC Order EA-13-109 ensure the capability to protect containment exists for each unit via full SAWA capability for each unit.
4. The Severe Accident impacts are assumed on one unit only due to the site compliance with NRC Order EA-12-049.
5. Though the occurrence of simultaneous ELAP events is possible because of a common Beyond Design Basis External Event (BDBEE) initiator, it is improbable that the accident progression timing will be identical among the affected units (e.g., simultaneous failure of all injection at all affected units at a site is not likely). Licensees planning to use common or shared equipment to maintain functionality of equipment used for decay heat removal within their mitigating strategies should ensure those plans do not significantly increase the likelihood of having simultaneous severe accidents at multiple units (e.g., maintain confidence that unit differences, redundancies, or backup plans exist such that RCIC systems in both units would not be expected to fail at the same time or the loss of a common FLEX pump would not necessarily result in core damage in both units).

The progression of an ELAP with core damage at a multiple unit site is unlikely to be identical among the units. As occurred at Fukushima Daiichi and Daini, core damage will be avoided as long as sufficient water supply is provided to the RPV. Fukushima Daiichi units 2 and 3 avoided core damage until the failure of their Reactor Core Isolation Cooling (RCIC) and/or High Pressure Core Injection (HPCI) systems stopped the makeup of water to the core. The failures of the units 2 and 3 RCIC systems did not, however, occur at the same time. Rather, they were separated by about 50 hours. The HPCI system at Unit 3 functioned for approximately 15 hours after RCIC was lost, but HPCI did not function at Unit 2. In view of this assumption that severe accident progression will not be the same at a multi-unit site and that the likelihood exists that FLEX may be successful at preventing core damage at one Unit while the other Unit progresses to core damage, it is not necessary that a licensee need to address simultaneous severe accident responses at multiple units at the same site.

While it is required to ensure that severe accident response capability for primary containment protection for all units exists, only one unit at a site is assumed to be experiencing the severe accident as the result of a screened-in hazard prior to additional resources becoming available. Note that this does not affect the requirement under EA-12-049 that FLEX injection be established early enough to prevent core damage.

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D. RESOLUTION: (Include additional pages if necessary. Total pages: 2)

Licensees are only required to validate severe accident response actions assuming severe accident conditions for a single unit at a site (simultaneous with ELAP for all units), but must have the capability to perform severe accident response on each unit at a site.

Applies to both Phase 1 and Phase 2.

Revision: 1

Date: 09-18-2015