Emergency Preparedness Program Frequently Asked Question (EPFAQ)

EPFAQ Number: 2016-002 **Date Accepted for Review:**
Originator: David Young
Organization: NEI
Submission: ADAMS Accession No. ML16182A308
Relevant Guidance: This question concerns NEI 99-01, *Methodology for Development of Emergency Action Levels*, Revisions 4 and 5; and NEI 99-01, *Development of Emergency Action Levels for Non-Passive Reactors*, Revision 6.
Applicable Section(s):

- Initiating Condition (IC) HA2 in NEI 99-01, Revisions 4 and 5: "FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown"
- ICs CA6 and SA9 in NEI 99-01, Revision 6: "Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode"
- Definition of VISIBLE DAMAGE in NEI 99-01, Revisions 4, 5 and 6

Status: Available for Public Comment

QUESTION OR COMMENT:

A review of industry Operating Experience has identified a need to clarify an aspect of the definition of VISIBLE DAMAGE as it relates to the ICs cited above; adding this clarity is necessary to minimize the potential for an over-classification of an equipment failure. There may be cases where VISIBLE DAMAGE is the result of an equipment failure and limited to the failed component (i.e., the failure did not cause damage to any other component or a structure). The current definition of VISIBLE DAMAGE does not adequately differentiate between damage resulting from, and affecting only, the failed piece of equipment vs. an equipment failure causing damage to another component or a structure (e.g., by a failure-induced fire or explosion). Can the definition of VISIBLE DAMAGE be clarified to help avoid an inappropriate emergency declaration in cases where an equipment failure does not result in damage to another component or a structure (i.e., VISIBLE DAMAGE affects only the failed component)?

A related question is also posed – Consistent with the approach used in other ICs, should a note be added to preclude an emergency declaration if the safety system affected by a hazard was not functional before the event occurred (e.g., tagged out for maintenance)?

PROPOSED SOLUTION:

Yes; the sentence below may be added to the definition of VISIBLE DAMAGE [as defined in NEI 99-01, Revisions 4, 5, and 6].

> Damage resulting from an equipment failure and limited to the failed component (i.e., the failure did not cause damage to a structure or any other equipment) is not VISIBLE DAMAGE.

From a plant safety and change-in-risk perspective, the consequences from the failure of a piece of equipment, accompanied by a hazard (e.g., a fire or explosion) that does not damage any other equipment or a structure, are essentially the same as the equipment failing with no attendant hazard. Neither event would appear to meet the definition of an Alert because the outcome does not involve an actual or potential substantial degradation of the level of safety of the plant (e.g., there has been no significant reduction in the margin to a loss or potential loss of a fission product barrier). Nuclear power plants are designed with redundant safety system trains that are required to be separated (i.e., installed in separate plant areas or have separation

within an individual area).

Absent any collateral damage to another component or a structure, a hazard associated with an equipment failure does not affect the ability to protect public health and safety, and there is no additional response benefit to be gained by declaring an emergency. The normal plant organization has sufficient resources and adequate guidance to respond to an equipment failure – guidance includes operating procedures and Technical Specifications; the fire protection [program], industrial safety and corrective action programs; and work management and maintenance requirements.

Concerning the second question, an emergency declaration would not be appropriate in response to a hazard affecting a piece of equipment or system that was non-functional prior to the event (e.g., tagged out for maintenance). For this reason and consistent with the approach used in other ICs, the following note may be added to IC HA2 (NEI 99-01 R4 and R5), or ICs CA6 and SA9 (NEI 99-01 R6).

> Note: If the affected safety system (or component) was already non-functional before the event occurred, then no emergency classification is warranted.

Consistent with the guidance in Regulatory Issue Summary (RIS) 2003-18, Supplement 2, *Use of Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 4*, dated January 2003, it is reasonable to conclude that the changes proposed above would be considered as a "deviation."

NRC RESPONSE:

The proposed guidance is intended to clarify that an Alert should only be declared when more than one component is visibly damaged by a hazardous event as defined in NEI 99-01, Revisions 4, 5, and 6. Additionally, the proposed guidance would provide greater clarity to the treatment of out of service equipment that may be affected by a hazardous event. As such, the proposed guidance will reduce the potential of declaring an Alert when events are in progress do not involve an actual or potential substantial degradation of the level of safety of the plant.

IC HA2 (NEI 99-01 R4 and R5), or ICs CA6 and SA9 (NEI 99-01 R6) do not directly escalate to a Site Area Emergency or a General Emergency due to a hazardous event. The Fission Product Barrier and/or Abnormal Radiation Levels/Radiological Effluent recognition categories would provide an escalation path to a Site Area Emergency or a General Emergency.

The proposed changes to notes applicable to ICs HA2 (NEI 99-01 R4 and R5), or ICs CA6 and SA9 (NEI 99-01 R6) provide further clarification to the guidance currently provided in NEI 99-01, Revisions 4, 5, and 6, and are more consistent with the current NRC-endorsed Alert classification language. The revised language would continue to meet the intent of the proposed response to the EPFAQs.

1. Adding the following note to the applicable EALs for this EPFAQ is acceptable as it meets the intent of the EALs and is consistent with other EALs (e.g., EAL HA5 from NEI 99-01, Revision 6; NEI-99-01 was endorsed by the NRC by letter dated March 28, 2013, available at ADAMS Accession No. ML12346A463) to ensure that declared events are based upon unplanned events with the potential to pose a radiological risk to the public.

   > *"If the affected safety system (or component) was already inoperable or out of service before the event occurred, then no emergency classification is warranted as long as the damage was limited to this affected safety system (or component)."*

The addition of the above note to the applicable EALs 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 of Emergency Action Levels," Revision 4*, dated January 2003 because implementation of the proposed note would not result in event classification differences.

2. The definition of "explosion" and "fire" from NEI 99-01, Revision 6, already provides guidance for when to apply the definition to the event for EAL classification purposes. However, the definition of "visible damage," which is also used in the EALs applicable to this EPFAQ, does not provide a commensurate level of guidance. If the visible damage exceeded this revised definition, then visible damage, as defined for EALs, would exist and therefore be available to support EAL decision-making.

   VISIBLE DAMAGE: Damage to multiple components, or one or more structures, that are readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected components in the area. Events that result in visible damage to one component, and does not appear to affect other components, do not meet the intent of this definition as the failure of a single component, regardless of cause, is well within the operational controls provided by a licensee's Technical Specifications and Operating Procedures. However, visible damage to more than one component does meet this definition, as well as visible damage to a structure.

   The change to the definition for VISIBLE DAMAGE would be considered a "DEVIATION" in accordance with Regulatory Issue Summary (RIS) 2003-18, Supplement 2, *Use of Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 4*, dated January 2003.

RECOMMENDED FUTURE ACTION(S):

☐ INFORMATION ONLY, MAINTAIN EPFAQ

☒ UPDATE GUIDANCE DURING NEXT REVISION

The addition of the above note to the applicable EALs 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 of Emergency Action Levels," Revision 4*, dated January 2003 because implementation of the proposed note would not result in event classification differences.

3. The definition of "explosion" and "fire" from NEI 99-01, Revision 6, already provides guidance for when to apply the definition to the event for EAL classification purposes. However, the definition of "visible damage," which is also used in the EALs applicable to this EPFAQ, does not provide a commensurate level of guidance. If the visible damage exceeded this revised definition, then visible damage, as defined for EALs, would exist and therefore be available to support EAL decision-making.

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