Emergency Preparedness Program Frequently Asked Question (EPFAQ)

EPFAQ Number:	2018-02
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):	Boiling Water Reactor (BWR) EAL Fission Product Barrier Table Thresholds for LOSS or POTENTIAL LOSS of Barriers; Reactor Coolant System (RCS) Barrier Loss #3.A
Date Accepted for Review:	4/4/2018
Status:	Out for Public Comment

QUESTION OR COMMENT:

Background

The term UNISOLABLE is defined as:

> An open or breached system line that cannot be isolated, remotely or locally.

BWR fission product barrier threshold RCS Loss #3.A states,

> UNISOLABLE break in ANY of the following: (site-specific systems with potential for high-energy line breaks)

The basis section for RCS Loss #3.A contains this statement,

> If it is determined that the ruptured line cannot be promptly isolated from the Control Room, the RCS barrier Loss threshold is met."

The pressurized water reactor (PWR) EAL Fission Product Barrier Table in NEI 99-01, Rev. 6, contains the following RCS Barrier Loss threshold:

> An automatic or manual ECCS (SI) [Emergency Core Cooling System (Safety Actuation)] actuation is required by **EITHER** of the following:
>
> 1. Unisolable RCS leakage
> 2. Steam Generator tube leakage

The basis section for RCS Loss for PWRs does not include a statement concerning prompt isolation from the Control Room.

Question

How should a plant operator classify an RCS leak at a BWR facility that is isolated using a local control (i.e., outside the Control Room)?

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PROPOSED SOLUTION:

The emergency classification level (ECL) declared for an off-normal event must be made in accordance with the licensee's approved emergency classification scheme. The generic scheme development guidance used by licensees, and endorsed by the NRC, is structured to require emergency classifications commensurate with increased risk to the plant, plant workers and the public. With respect to the definition of UNISOLABLE, the provision for "local" isolation is included to preclude unwarranted emergency declarations, i.e., if operators can locally isolate an RCS leak, then the integrity of the RCS barrier will be maintained and there is no increased risk to the plant, plant workers or the public (although subsequent corrective actions may be required by plant Technical Specifications and procedures).

In accordance with the requirements of 10 CFR 50, Appendix E, section IV.C.2, a licensee shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate ECL. Following the detection of an RCS leak, a plant operator must assess, classify, and declare the emergency within 15 minutes of the initial leak indications. If operators, following procedures, can isolate the leak within 15 minutes of the first indication, then RCS barrier integrity will be maintained and no emergency declaration is required. If the leak cannot be isolated, from the Control Room or locally per the definition of UNISOLABLE, within 15 minutes of initial indications, then the RCS barrier must be considered lost and the appropriate ECL declared.

The sentence cited above from the basis section for RCS Loss threshold #3.A should be understood within the context of assessing the conditions associated with a large high-energy line break. The authors of NEI 99-01, Revision 6, wrote this statement with the assumption that a plant would not have the capability to locally isolate such a leak within 15 minutes, hence the wording "from the Control Room;" there was no intent to preclude consideration of a local capability should a plant design provide one. If a plant design has a local isolation capability, then the basis section should be revised to state that RCS barrier Loss threshold #3.A is met if prompt isolation cannot be accomplished from the Control Room or locally (in accordance with the definition of UNISOLABLE). "Prompt" should be understood to mean that the emergency must be declared as soon as the plant operator determines that the leak cannot be isolated and in all cases within 15 minutes of initial event indications.

A licensee may add clarifying wording reflecting this position to their site-specific emergency classification scheme procedure and/or technical basis document. 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 this change would be considered as a "difference."

NRC RESPONSE:

Section 5.8, *"Classification of Transient Conditions,"* of NEI 99-01, Revision 6, states:

> If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the applicable EAL is not considered met and the associated emergency declaration is not required.

This is consistent with 10 CFR Part 50 Appendix E, §IV.C.2 which states, in part:

> . . . Nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health. . .

Considering that a RCS leak that is isolated within 15 minutes would constitute a condition for which the operator was successful in correcting the condition (the RCS leak) the NRC staff finds this action to be consistent with NEI 99-01, Revision 6, and with 10 CFR Part 50 Appendix E, §IV.C.2. Considering that the proposed solution is consistent with the Section 5.8 of NEI 99-01, Revision 6, it is reasonable to conclude that the proposed solution would be considered a difference as provided by the guidance in RIS-2003-18, Supplement 2.

The NRC staff finds the proposed solution to EPFAQ 2018-02 acceptable.

RECOMMENDED FUTURE ACTION(S):

☐ INFORMATION ONLY, MAINTAIN EPFAQ

☒ UPDATE GUIDANCE DURING NEXT REVISION

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