EMERGENCY PREPAREDNESS FREQUENTLY ASKED QUESTION (EPFAQ)

EPFAQ Number: 2015-009 **DATE ACCEPTED** 25-Sep-15

STATUS:
UNDER REVIEW

ORIGINATOR KEN EVANS **EMAIL**

ORGANIZATION Illinois Emergency Management Agency

PHONE #

RELEVANT GUIDANCE: NEI 99-01 R6

APPLICABLE SECTION(S EALS AG1 AND AS1

QUESTION OR COMMENT

The implementation guidance provided in NEI 99-01, Revision 6, for EALs AG1 and AS1 is vague in reference to the selection of the source term. The developer notes provided on pages 42 and 46 (for AS1 and AG1, respectively) do not specify an actual source term. The only guidance provided is the fourth bullet, which states, "Acceptable sources of this information include, but are not limited to, the RETS/ODCM, and values used in the site's emergency dose assessment methodology." While developers are cautioned to ensure that the method used results in a logical escalation in the ECL, they are not provided guidance for the selection of an appropriate source term. As a result, some licensees have used an ODCM source term that contains only noble gases. This is not considered to be a realistic source term for a General Emergency or Site Area Emergency Classification, in that at this accident level severity, the source term would be expected to include non-noble components. For example, the EALs for AS1 and AG1 include dose set points of 500 and 5000 mrem thyroid CDE, respectively. Because it is recognized that the iodine fraction of the source term could be limiting in these EALs, the thyroid CDE PAG was also included in AS1 and AG1. Excluding non-noble components in calculations of effluent set points for these two EALs results in values that are extremely large and non-conservative. Based on the above, is it acceptable to use a noble gas only source term for the threshold calculation of effluent monitor readings for EALs AG1 and AS1?

PROPOSED SOLUTION

Add guidance for the selection of an appropriate source term in set point calculation, such as the gap or clad source term as referenced in NUREG-1465.

NRC RESPONSE:

EMERGENCY PREPAREDNESS FREQUENTLY ASKED QUESTION (EPFAQ)

EPFAQ Number: 2015-010 **DATE ACCEPTED** 25-Sep-15

STATUS: UNDER REVIEW

ORIGINATOR KEN EVANS **EMAIL**

ORGANIZATION Illinois Emergency Management Agency

PHONE #

RELEVANT GUIDANCE: NEI 99-01 R6, RTM-96

APPLICABLE SECTION(S FISSION BARRIER MATRIX

QUESTION OR COMMENT

The guidance provided for determination of loss or potential loss of the three fission product barriers in NEI 99-01, Revision 6, is based on several plant variables. The plant high-range containment radiation monitor is one of the variables used in the calculation. Initiating conditions are shown for BWRs on page 83 (example 4) and PWRs on page 98 (example 3.A). These conditions reference the determination of a site-specific value that is calculated based on a percentage of fuel clad damage. Many licensees have referenced the graphs in RTM-96, as listed in Figures A.5- A.12. In an attempt to clarify the values, these figures were reproduced in RTM-2002 with percent fuel melt/clad damage values added to relate with the dose rates on the ordinate axis. Despite this clarification, some licensees continued to use a logarithmic relationship between percent clad damage and containment radiation reading in their core damage procedure. This was contrary to the fact that the percentage of fuel clad failure is understood to be directly proportional to containment radiation reading. This relationship is demonstrated by the equations in the following guidance documents:

1. Westinghouse Owners Group Core Damage Assessment Guidance (WCAP-14696-A, Revision 1, 1999), p. 3

$$\%\ \text{Clad Damage}_{(CRM)} = \frac{\text{Current Containment Radiation Level}}{\text{Predicted Containment Radiation Level at 100\% Power}}$$

2. BWR Owners' Group Guidance Methods of Estimating Core Damage in BWRs (NEDC-33045P, Revision 0, July 2001), p. B-11

% Cladding Damage= Indicated Radiation Level 100%/ Clad Damage Radiation Level *X 100*

Does the NRC agree that there is a direct proportionality in the amount of fuel clad damage and the containment radiation monitor reading? Does the NRC also agree that the figures for clad damage in the RTM should be read that way?

PROPOSED SOLUTION

Evaluate issue and determine best method for eliminating the possible confusion in the use of the RTM graphs in determining clad failure based on containment radiation monitors, and clarify how the graphs are to be used.

NRC RESPONSE:

EPFAQ Number: 2015-012 **DATE ACCEPTED** 25-Sep-15

STATUS: UNDER REVIEW

ORIGINATOR DAVID YOUNG **EMAIL** dly@nei.org

ORGANIZATION Nuclear Energy Institute (NEI)

PHONE # 202.739.8127

RELEVANT GUIDANCE: SOME PLANT PARAMETER INFORMATION AND DATA MAY NOT BE AVAILABLE IN THE CONTROL ROOM AND MUST BE OBTAINED FROM OTHER REMOTE OR LOCALLY READ SOURCES. CAN THIS TYPE OF INFORMATION AND DATA SOURCE BE USED IN AN EMERGENCY ACTION LEVEL (EAL)?

APPLICABLE SECTION(S NEI 99-01 (ALL REVISIONS)

QUESTION OR COMMENT

Some plant parameter information and data may not be available in the Control Room and must be obtained from other remote or locally read sources. Can this type of information and data source be used in an Emergency Action Level (EAL)?

PROPOSED SOLUTION

The overriding consideration is to develop EALs that can support 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," as required by 10 CFR 50, Appendix E, Section IV.C.2. In support of this requirement, emergency classification scheme developers should specify EAL parameter information and data that can be read in the Control Room, or readily determined at another remote location or locally and made available to the Control Room. To illustrate this expectation, it would normally be acceptable to specify the following information and data sources in an EAL.

- An indication located anywhere inside the Control Room.
- An indication located outside the Control Room but within close proximity such that operators could obtain the data themselves. For example, a fire alarm zone panel that is located just outside the Control Room doors.
- An indication located outside the Control Room and not within close proximity but that can be determined and provided to the Control Room staff within a time frame sufficient to support an emergency declaration within 15 minutes of other indications or reports of an off-normal condition. For example, a reading from a Continuous Air Monitor located on the refueling deck.

Emergency classification scheme developers should confirm that personnel can assess all EAL parameters under the environmental conditions that would likely prevail at the time of the emergency assessment and response. For example, the use of water level markings available on a building wall to support a flooding assessment may be used as a flooding EAL threshold provided that the ability of personnel to safely and reliably obtain the readings during potential flood-related conditions is verified.

With respect to the last bullet above, NEI 99-01, Revision 6, contains three generic EALs that make use of wide-range spent fuel level instrumentation installed to meet the requirements of NRC Order EA-12-051. The guidance documents associated with this Order allow licensees latitude in the design and operation of the instrumentation. For example, the instrumentation may be operable only during an event involving an extended loss of AC power (i.e., actions are taken at the time of the emergency to place the instrumentation in service). In addition, the level indications may be available in the Control Room or at an in-plant location, and determined in accordance with procedures and guidelines used only under certain circumstances. As a result, there may be cases where the acquisition of wide-range spent fuel pool level readings will require more than 15 minutes from an indication or report of an off-normal condition; however, these EALs should still be included as they provide a redundant path for escalating an emergency classification during a beyond

design basis event. The Developer Notes for these EALs encourage developers to ensure that their EALs and Bases reflect any site-specific constraints or limitations associated with the design or operation of the instrumentation. This will allow the NRC staff reviewer of an EAL scheme conversion submittal to understand how the site-specific instrumentation will be used.

NRC RESPONSE:

EPFAQ Number: 2015-013

DATE ACCEPTED 25-Sep-15

STATUS:
UNDER REVIEW

ORIGINATOR DON JOHNSON

EMAIL don.johnson@nrc.gov

ORGANIZATION USNRC

PHONE # 301.287.9230

RELEVANT GUIDANCE: NEI 99-01 R6

APPLICABLE SECTION(S HG1

QUESTION OR COMMENT

This EAL has two components, each predicated upon Hostile Action occuring at the facility. Should consideration be given to split this EAL into twp parts; one for a Hostile Action resulting in a loss of the ability to cool the reactor such that fuel damage is likely within 4-hours, and one for a Hostile Action resulting in a loss of physical control of spent fuel?

PROPOSED SOLUTION

NRC RESPONSE:

EMERGENCY PREPAREDNESS FREQUENTLY ASKED QUESTION (EPFAQ)

EPFAQ Number: 2015-014

DATE ACCEPTED 25-Sep-15

STATUS:
UNDER REVIEW

ORIGINATOR DON JOHNSON

EMAIL don.johnson@nrc.gov

ORGANIZATION USNRC

PHONE # 301.287.9230

RELEVANT GUIDANCE: NEI 99-01 R6

APPLICABLE SECTION(S HS6

QUESTION OR COMMENT

Should consideration be given to allow for specifying relavent operating modes for the key safety functions listed in this EAL (reactivity control, core cooling, or reactor coolant system (RCS) heat removal)?

PROPOSED SOLUTION

NRC RESPONSE:

EMERGENCY PREPAREDNESS FREQUENTLY ASKED QUESTION (EPFAQ)

EPFAQ Number: 2015-015

DATE ACCEPTED 25-Sep-15

STATUS:
UNDER REVIEW

ORIGINATOR DON JOHNSON

EMAIL don.johnson@nrc.gov

ORGANIZATION USNRC

PHONE # 301.287.9230

RELEVANT GUIDANCE: NEI 99-01 R6

APPLICABLE SECTION(S SA1, SS1, SG1, CU2, CA2

QUESTION OR COMMENT

Should EALs SA1 and CU2 contain a list of power sources applicable for consideration and describe the criteria for what sources may be credited? In addition, should guidance be included to explain why a list of sources is not necessary for EALs SS1 (CA2) and SG1 as these EALs a loss of ALL sources?

PROPOSED SOLUTION

NRC RESPONSE: