

RESPONSE

TO

**NRC STAFF COMMENTS IN MEMORANDUM
DATED 11/06/2002
ON**

NEI 99-01 Revision 4 (Dated Sept 2002)

Forward

This document is a preliminary response to NRC staff comments provided in a letter from Peter C. Wen to C. I. Grimes dtd 11/06/2002. This document provides the staff comment and a preliminary response and/or action statement.

This document was prepared by the NEI staff and industry representatives. We have provided a response to each comment. Thus, our response should not be taken as firm commitments.

**NEI ITF RESPONSE TO NRC COMMENTS ON THE
SEPTEMBER 2002 DRAFT OF NEI 99-01**

The following comments are numbered to correlate with the NRC's questions/comments.

1. Table of contents

Item 2.0 should read "CHANGES INCORPORATED IN REVISION 4."

NEI Comment: NEI agrees and the change will be made.

2. Section 3.8 Emergency Class Thresholds

This section does not seem to address the class threshold for Cold shutdown and Refueling modes. A basic 'tenet' of NUMARC-007 was that emergency conditions existed when operations were outside the Tech Spec LCO and Action Statement Times. This does not seem to be applied to the Cold Shutdown mode EALs. How is this addressed?

NEI Comment: Only the first paragraph of NUMARC/NESP-007 Section 3.8 differs from NEI 99-01. The following words were deleted "Once the EAL matrix structure is defined as shown in Figure 2, the next step is to define the thresholds for each emergency class." This was sentence was considered to be a historical lead in describing how NUMARC EALs were to be developed. The existing section 3.8 text does not specifically talk about EALs with regard to any Technical Specification mode of operation therefore the NEI EAL ITF did not see a need to specifically discuss Cold Shutdown mode EALS. NEI is open to suggestions but does not see a need to add text to specifically address Cold shutdown or refueling modes or any of the other Technical Specification modes.

3. Section 3.14 Cold Shutdown/Refueling IC/EALs

a. Typo in last paragraph on pg 3.14, "NUREG-054" missing the "6".

NEI Comment: NEI agrees and the change will be made.

b. This section does not address the "Refueling Tech Specs." It seems that they should be acknowledged in some manner relative to their usefulness or lack of benefit.

NEI Comment: NEI recommends to change the last sentence in paragraph 2 from "The NEI shutdown EALs are based on performance capability to the extent possible with consideration given to RCS integrity, containment closure, and fuel clad integrity for the applicable modes." To "The NEI cold shutdown and refueling EALs are based on performance capability to the

extent possible with consideration given to RCS integrity, containment closure, and fuel clad integrity for the applicable modes.”

4. Section 5.1 Generic Arrangement

Second to last bullet item, second sentence has a formatting error (unnecessary carriage return.).

NEI Comment: NEI agrees and the change will be made.

5. Section 5.2 Generic Bases

The last paragraph addresses the “Hazards Recognition Category.” It states that if the hazard results in VISIBLE DAMAGE to plant structures or equipment associated with safety systems or if system performance is affected, the event may be escalated to an Alert. Is it intentional that impact to personnel is not a reason for escalation, or is the only way to escalate intended to be by impact on structures or equipment? This seems inappropriate since the purpose of an E-Plan is to protect the health and safety...

NEI Comment: NEI believes that personnel injuries of sufficient numbers such that system performance is affected would be result in declaration based on ED judgment ICs. HU5 specifically addresses insufficient support personnel in the basis. Injured personnel, as a stand alone issue does not meet the risk definitions for the appropriate Classification levels unless the provisions of HU5 are met. Injured personnel, as a stand alone issue does not meet the risk definitions for the appropriate Classification levels unless the provisions of HU5 are met.

6. 5-A-1, Recognition Category A

IC AU1 has a “-“ in “Radiological” unnecessarily.

NEI Comment: NEI agrees and the change will be made.

7. AU2, Unexpected increase in Plant Radiation.

This IC is a change from the NUMARC-007, in that the “Airborne concentration” part has been removed. Additionally, the previous document (007) had 4 EALs for this IC, this version has 2. Why is the change appropriate?

NEI Comment: The IC was revised from “Unexpected Increase in Plant Radiation or Airborne Concentration” to “Unexpected Increase in Plant Radiation”. The number of EALs were reduced from 4 to 2 by combining NUMARC-007 EALs 1 and 2 into NEI 99-01 EAL 1. NUMARC-007 EAL 3 was moved to NEI 99-01 ISFSI EAL E-AU1 which was deleted by mutual agreement at the July 14, 2000 public meeting. NUMARC-007 EAL 4 is NEI 99-01 EAL 2. Wording does not preclude airborne monitors being a part of the site-specific indication, however area monitoring is believed to be a more reliable indication tool.

8. CU1, EAL 1 or 2

- a. Values provided for the Cold shutdown condition are the same as the values for leakage at the same classification level when pressurized. What is the justification for the use of the same criteria when the RCS is pressurized or depressurized?

NEI Comment: As discussed in the CU1 basis, in cold shutdown conditions the RCS will normally be intact and RCS inventory and level monitoring means such as Pressurizer level indication and makeup VCT levels are normally available. The NEI ITF felt there was no need to develop a different criteria from that used at for higher operating modes.

- b. The bases refer to the use of reduced inventory instrumentation such as level hose indication however the mode is Cold shutdown. Is this level indication expected to be employed when the vessel head bolts are still tensioned?

NEI Comment: This instrumentation may be installed in cold shutdown but as also indicated in the basis, normal instrumentation means may also be available in cold shutdown.

9. IC CU2, EAL 1 or 2

- a. Are these EALs equally applicable for one bundle as well as the entire core, in other words there is no distinction of risk for number of bundles in the core?

NEI Comment: The NOUE based on loss of RCS inventory in the refueling mode is not dependent on the number of fuel assemblies or bundles in the reactor vessel. NEI believes that the basis clearly describes escalation to ALERT and SAE for conditions resulting in core uncover and core heatup.

- b. Why is the spent fuel pool level decrease considered to be appropriately handled through the use of the Abnormal Rad conditions but level decreases in the RPV during refueling are not?

NEI Comment: AU2 EAL 1 addresses spent fuel pool, RPV, and transfer canal level problems based on increasing area monitor readings (all modes). AU2 basis does speak to the need for personnel to monitor level in the refueling canal as a backup to the radiation monitor reading indications since actions in the SFP area may result in spurious radiation readings (Note that most utilities do not have remote SFP level indication but do have level alarms). NEI believes that appropriate consideration is provided in all modes by the NOUE abnormal radiation condition EALs. Escalation would be via AA2 EAL2 which addresses spent fuel pool, RPV, and transfer canal water level decrease problems based on level readings (all modes).

CU2 only addresses RCS level decreases below the flange for > 15 mins (refueling). CU2 was added to the cold shutdown/refueling EAL set to show logical progression of loss for the more time critical RPV level loss. The RPV level problem can result in uncover more rapidly due to

the small water volume available for cooling.

c. The time threshold during Cold shutdown and Refueling modes is the same as pressurized operations, is this appropriate to the associated risk for the given conditions?

NEI Comment: The EAL ITF felt that 15 minutes was an appropriate time frame that gave operators time to restore level – inability to restore level in 15 minutes may be indication of a more serious problem results in escalation via CA2.

d. Why is 15 minutes the correct threshold for power operations were the starting temperatures and pressures are higher and therefore closer to a fuel melt / clad damage condition if 15 minutes is the correct time when the corresponding starting temperatures are considerably less?

NEI Comment: It is not clear as to what Power Operation EAL is being referenced in the question.

10. IC CU5, EAL 1 or 2

How is this EAL applied to a plant that shutdown for a fuel failure to meet the operational LCO? Does entry into Cold Shutdown or Refuel mode require declaration of an emergency?

NEI Comment: NEI believes that the plant would already have declared a NOUE based on SU4, Fuel Clad Degradation, and that no additional declaration would be required based on mode change to cold shutdown/refueling.

11. IC CU6, EAL 1 or 2

a. Does it matter if the communications ability is restored in some defined time or does an intermittent or short duration occurrence require classification?

NEI Comment: A NOUE would be required to be declared even for a short duration loss of all communication capability – NEI is open to discussion if NRC believes that a time frame for loss should be considered.

b. What does “defeats the plant operations staff ability to perform routine task necessary for plant operations” entail? Can the use of runners or other non-telephonic or radio type communication protocol preclude implementation of this EAL?

NEI Comment: The example list provided in the CU6 basis document includes commercial telephones, sound powered phones, paging systems, radios, and walkie talkies. When writing the basis document, the EAL ITF did not discuss runners as a viable means of normal communication but NEI is open to discussion if NRC believes that this is a viable communication capability for all modes of operation.

12. IC CA4

It appears that EALs 1 and 2 are only applicable in the Refuel mode since they specify that RCS integrity is not established, based on the Mode Applicability Matrix Refuel is the mode that allows the vessel head to be de-tensioned. Would RCS integrity be intentionally violated in Shutdown? If this is correct then it appears that EAL 3 only applies in cold shutdown, is this accurate?

NEI Comment: In reference to the EAL1 and 2 question, RCS integrity is not synonymous with the Reactor vessel head being detensioned. The integrity of the RCS may be intentionally violated during cold shutdown operations (especially during startup fill and vent operations). In reference to the EAL3 question, the EAL would be applicable for unplanned events that resulted in temperature increasing above 200 degrees for greater than 60 minutes when the RX vessel head is detensioned (ie. Refueling mode) or may be applicable in cold shutdown with all RX vessel head bolts tensioned and an unplanned event (like loss of RHR) results in unintentional mode change and RCS pressurization.

13. IC CG1

a. Is this IC intended to be applied regardless of the number of bundles in the core, if so what is the basis for risk significance? If not, what is the core size limitation and basis?

NEI Comment: The IC was written to be applicable if any irradiated fuel is in the RPV. The risk significance of only melting a few assemblies versus an entire core was not discussed as part of the EAL development. NEI agrees that risk significance would be reduced if a full core load was not involved but has not developed an engineering study to evaluate the risk for applicability to this IC.

b. How does this condition significantly differ from a spent fuel pool drain down situation resulting in fuel uncover that is processed through the abnormal rad condition ICs?

NEI Comment: It does don't significantly differ unless the time since shutdown is less than 100 hours. If the time is less than 100 hours then the heat available to provide source term transport may be significantly higher for this event. The highest classification level for a spent fuel pool event would be Alert via AA2 unless some motive force in the SFP results in offsite dose exceeding AS1 or AG1 dose limits at the Site Boundary.

c. What is the expected dose consequence off-site from this event?

NEI Comment: Highly variable, based on time and number of bundles but in all likelihood small - NEI agrees that this IC is a very conservative and that the risk to the public may be minimal.

14. Hazards and Other Conditions affecting Plant Safety – HA1

a. HA1 - Natural and Destructive Phenomena affecting the Plant Vital Area.

The Seismic event has to greater than the OBE but does not have to cause damage to any system, structure or component. This does not seem consistent with other parts of this section.

NEI Comment: Per the basis document, seismic events that exceed the operating basis earthquake limits should be assumed to be of sufficient magnitude to have caused damage to plant safety systems. The EAL ITF believes that an Alert is justified until such time that walk-downs and engineering reviews can be completed to prove that no serious structural issues exist.

b. HA1 - EAL 2, 3 and 6 have similar wording related to “phenomena” occurring inside the protected area boundary and resulting in visible damage. EAL 5 refers to the creation of industrial hazards that preclude access. Shouldn’t the wording of these be more consistent, it seems that the high winds, vehicle crash or other occurrences could reasonably create industrial hazards and /or preclude access? What is the focus of this class, is it structure or equipment failure, hazards to accessibility, or injury to personnel? Is it expected that the impact occur or that the reasonable potential for impact exist?

NEI Comment: Even though the EAL ITF worked very hard to intentionally choose the wording of each of the EALs, NEI is open to any suggested changes that might enhance the clarity of the EALs.

14. Hazards and Other Conditions affecting Plant Safety – HA3

a. HA3 - The IC was changed from the NUMARC - 007 version in that systems required to maintain safe operations are not included in the IC. The IC now only refers to systems required to establish or maintain safe shutdown. Is this an oversight or intentional, since the EAL refers to the safe operation of the plant?

NEI Comment: The IC’s appear to be identical. As stated in the basis of both NUMARC-007 and NEI 99-01, “This IC is based on gases that affect the safe operation of the plant”.

b. HA3 - With regard to EAL 1 and 2:

EAL 2 appears to only require the presence of a flammable gas in the vital area while the toxic gas must preclude access to the area for safe operation of the plant. Why is there a difference, shouldn’t both have the same limitations or constraints?

NEI Comment: NEI believes that the basis document contains the answer to this question. EAL 2 basis indicates that once an uncontrolled release of flammable gas is determined to be occurring, that sampling must be done to determine if the concentration of the released gas exceeds the flammability range. If the sample analysis indicates that a flammability limit has been exceeded then that area would need to be made inaccessible due to threat to life similar to toxic gas constraints.

c. HA3 – With regard to EAL 1

1) EAL 1 requires that personnel are not able to access the area for safe operation of the plant. How is safe operation of the plant different from normal operation of the plant? 2) If the area can be accessed with personal protective equipment is the EAL met? 3) The basis identifies that areas that require only temporary access that can be supported by the use of respiratory protection should not be considered as exceeding the threshold. Does this temporary access mean that without the gas normal access would be available for routine rounds and logkeeping, with the gas present using an appropriate respiratory device, rounds and logkeeping may continue without meeting the EAL threshold?

NEI Comment: 1) The basis states that “This IC is based on gases that affect the safe operation of the plant.” NEI believes that safe operation of the plant is synonymous with normal operation of the plant. 2) No (EAL 1 only) 3) Yes (EAL 1 only)

d. HA3 EALs

It appears that all Vital Areas are considered equal when used in these EALs, if so, why and if not which areas are not to be included?

NEI Comment: All Vital Areas are considered equal in HA3 except as indicated in the basis (See question 15 comment.

15. IC HS1 + Regarding EAL 1

The EAL refers to “the plant VITAL AREA”, is this intended to include all areas designated vital areas at a specific site or can some of the site designated vital areas be left out of the list for this EAL?

NEI Comment: As specified in the basis, “This IC applies to buildings and areas contiguous to plant VITAL AREAS or other significant buildings or areas (i.e., service water pump house). The intent is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to plant VITAL AREAS. A VITAL AREA is any area, normally within the PROTECTED AREA, which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.

16. IC SU6 + Regarding EAL 1 and 2

Similar to IC CU6, since 10 CFR 50.72 requires notification for loss of communications to occur within 8 hours of event, to ensure loss of communication capability is significantly more comprehensive than the 50.72; does this condition have to extend beyond the 8 hours reporting time in 50.72? What specific criterion distinguishes these events between reportability and emergency conditions?

NEI Comment: 10 CFR 50.72(b)(1)(v) states that "Licenses shall report: "Any event that results in a major loss of emergency assessment capability, offsite response capability, or communication capability (e.g., significant portion of control room indication, ENS, or offsite notification system)." NUREG-1022 states that if not reported as an emergency under 50.72(a), licensees are required to notify the NRC of a major loss of there emergency assessment, offsite response, or communication capability as soon as practical and in all cases within 8 hours. Examples of events that the NUREG-1022 criterion is intended to cover are those in which any of the following is not available: SPDS, ERFs, ENS, PNS, plant monitors necessary for accident assessment.

SU6 and CU6 require NOUE declaration with a loss of all offsite or onsite communication.

17. Appendix C – Matrix

CU1 should be identified as "New" since it was not applicable in Cold Shutdown in the NUMARC + 007 version. CU8 is also new; it is not in NUMARC-007.

NEI Comment: CU1 was not listed as "new" because it was the intention of the writers of NUMARC-007 users to include Cold Shutdown in the operating mode applicability for old SU5. NEI believes that most NUMARC-007 users do include SU5 in cold shutdown. NEI can add this to the "new" list in section 3.14 and the matrix on page C.1, if needed.

CU8 was added in Rev 3 and will be added to the "new" list in section 3.14 and the matrix on page C.1 in 99-01 Rev. 4.

18. Appendix E

Removed the Rad EAL for the ISFSI from the IC, but did not remove it from the discussion appendix (E). Additionally, what is the bases / reasoning for removal?

NEI Comment: NEI agrees and the text at the top of page E.4 will be removed. The bases/reasoning for removal of E-AU1 is an August 8, 2000 letter from NRR to NEI that closed issues discussed at a July 14, 2000 public meeting on NEI 99-01. Comment 11 of this letter addresses the E-AU1 deletion and is duplicated below:

NEI Comment 11:

Proposed IC E-AU1 is redundant because any degradation of a cask/module sufficient to affect its shielding capability would be as a consequence of a natural event or accident (natural events/accidents are covered by E-HU1). Criticality is not a concern; 10CFR72.124 specifically excludes the need for criticality monitoring systems because the packaging and storage configuration for special nuclear material in dry storage areas ensure that 10CFR20 limits are met. The limits were selected to maintain radiation doses to the general public within the limits

provided in the regulations. The ISFSI perimeter radiation levels are not an assumption in any accident analysis, but are used to ensure compliance with regulatory limits on dose to the public during normal operations. Discussions with the NRC staff relative to development of standardized technical specifications for ISFSIs propose omitting these provisions because they are already addressed by regulation (10 CFR 20). Therefore, E-AU1 should be removed from NEI 99-01 pages 5-E-1, 5-E-3 and 5-E-4.

NRC RESOLUTION

The staff accepts the proposal change to NEI 99.01.