

August 8, 2000

Mr. Alan Nelson, Senior Project Manager  
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SUBJECT: Nuclear Regulatory Commission (NRC) Resolution of Public Comments on Draft Regulatory Guide (DG) 1075, "Emergency Planning and Preparedness for Nuclear Power Reactors," endorsing NEI 99-01, Revision 4, "Methodology for Development of Emergency Action Levels," February 2000

Dear Mr. Nelson:

On July 14, 2000, in a public meeting, the NRC staff met with representatives of the Nuclear Energy Institute and industry to discuss public comments received on DG 1075, "Emergency Planning and Preparedness for Nuclear Power Reactors," which proposes to endorse NEI 99-01, Draft Revision 4, "Methodology for Development of Emergency Action Levels". If approved, DG 1075 will be issued as Revision 4 of Regulatory Guide 1.101. In that meeting, we stated that we would provide to you by letter our resolution of those comments (see attached). Please note that, comments 5, 11, and 12 include changes that need to be incorporated into the NEI 99-01 document. Once we receive the final revision of NEI 99-01 with the appropriate changes, we will proceed with finalizing RG 1.101.

If you have any questions please contact Patricia Milligan at (301) 415-2223 or by e-mail ([pxm@nrc.gov](mailto:pxm@nrc.gov)).

Sincerely,

/

/RA/

Joseph L. Birmingham, Project Manager  
Generic Issues, Environmental, Financial  
and Rulemaking Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Project 689

Enclosure: As stated

cc w/encl: See next page

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RESOLUTION OF COMMENTS ON  
FINAL DRAFT REVISION 4, NEI 99-01

**Comment 1:**

This document should also receive a review by NRC's Office of Nuclear Materials Safety and Safeguards or Regional review by the Divisions of Nuclear Materials Safety since those organizations are most familiar with the provisions for permanently defueled sites and ISFSI.

NEI POSITION/ANSWER

NEI was under the impression that NRC did have internal reviews performed at the HQ's level and both fuels and NMSS were involved in the review of NEI-99-01. The comments from these organizations were provided to the NEI task force in Public Meetings held at White Flint. Agreed upon changes based on NRC/NRR comments were incorporated into the revision of NEI-99-01 that was posted for public comment.

NRC RESOLUTION

This document was reviewed by NMSS and the fuels group. They provided comments to the NEI task force in a Public Meeting held at White Flint on May 21, 1999.

**Comment 2:**

The NRC should specify that licensees that wish to adopt the EAL scheme detailed in NEI-99-01, Revision 4, should do so as a licensing action request to the Document Control Desk. The Office of NRR should evaluate licensee's approach to implementing the EALs described in NEI 99-01, Revision 4.

NEI POSITION/ANSWER

The following options should be considered:

1) NUREG 0654 users converting to NEI 99-01 Rev 4 - since this is a change in methodology NRC review and approval should be required.

2) NUREG 0654 or NUMARC 007 users updating their EAL procedures to include -shutdown, decommissioning, or ISFSI EALs - since these are enhancements the licensee should be able to implement under 50.54(q)

3) NUMARC users updating their procedures to include lessons learned from NEI 99-01 Rev 4.- since this is an enhancement the licensee should be able to implement under 50.54(q)

NRC RESOLUTION

A Regulatory Guide endorsing NEI 99-01 is not the appropriate mechanism to resolve this licensing issue. The staff will consider the comment and NEI position/response when resolving this issue.

**Comment 3:**

ICs/EALs that are applicable in all modes should be replicated under Recognition Category C, in order that a classifying individual at a plant in cold shutdown, refueling, and defueled mode can go to one location to evaluate the applicable ICs/EALs.

#### NEI POSITION/ANSWER

NEI believes that the guidance provided to the user of this generic guidance in Sections such as 3.17.1 and 5.3 adequately address this concern without further revision to NEI 99-01.

#### NRC RESOLUTION

This issue is adequately addressed by NEI 99-01 and no additional changes to NEI 99-01 are necessary to address this issue.

#### **Comment 4:**

ICs/EALs from Recognition Category H should be replicated under Recognition Category D, in order that a classifying individual as such a defueled plant can go to one location to evaluate the applicable ICs/EALs. There should be recognition of at least the same destructive phenomena (earthquake, tornado, fire, etc.) as are recognized for operating reactors.

#### NEI POSITION/ANSWER

NEI believes that the category H EALs have been included to the extent necessary to ensure that correct classifications are made based on risk to public health and safety. The licensing process for a permanently defueled station is summarized in Section 3.15. The thought processes behind the H category EALs included in NEI 99-01 are provided in Appendix D.

#### Excerpt from Appendix D:

The Emergency Director has the discretion to classify events based on the classification level definitions. This discretion should be used when conditions or events are observed and no specific IC/EAL is apparent. A discretionary Alert will provide the on shift crew with additional personnel to address the abnormal condition. The NOUE will heighten awareness of the abnormal condition.

#### NOUE (D-HU2)

Other conditions judged warranting declaration of an UE/ALERT (D-HA2)

Other conditions judged warranting declaration of ALERT. Natural and destructive phenomena are classified at the NOUE level because of the unknown factors of the effects when they occur. Escalation to an Alert is through the observable effects of the natural and destructive phenomena via D- AA2.

#### NOUE (D-HU3)

Natural or destructive phenomena inside the Protected Area affecting the ability to maintain spent fuel integrity.

#### NRC RESOLUTION

This issue is adequately addressed by NEI 99-01 and no additional changes to NEI 99-01 are necessary to address this issue.

#### **Comment 5:**

Fission Product Barrier Reference Tables should recognize under the GE classification the loss of all three barriers, not just the loss of two and the potential loss of the third.

#### NEI POSITION/ANSWER

Agree - reword Table 5-F-1 GENERAL EMERGENCY criteria as follows:

*From:*

Loss of ANY Two Barriers AND Potential Loss of Third Barrier

*Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*

*To:*

Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier

*Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*

#### NRC RESOLUTION

NRC agrees that NEI 99-01 be reworded as indicated.

#### **Comment 6:**

AA1 and AS1 - NEI 99-01, following the example of NUMARC/NESP-007 still does not provide additional guidance on how to avoid the overlap of the Alert Level IC for Radiological Effluent and the Site Area Emergency Level IC in the same Recognition Category. Since the methodology for determining the radiation Monitor Channel levels in AA1 uses annual average meteorology, which is restricted to the most limiting downwind sector and AS1 uses actual meteorology, the Alert level for Radiological Effluent may be higher than the SAE level under certain conditions.

#### NEI POSITION/ANSWER

NEI believes that this issue has been adequately addressed by in Appendix A of NEI 99-01.

#### NRC RESOLUTION

This issue is adequately addressed by NEI 99-01 and no additional changes to NEI 99-01 are necessary to address this issue.

#### **Comment 7:**

CG1 - EAL 1 - is unnecessarily restrictive in that it does not account for either the boiloff of RPV inventory due to heat up when in refueling mode or inter-system leakage from the RPV to another closed system. Such loss of inventory would not necessarily be captured in a sump or tank if the containment was not sealed.

#### NEI POSITION/ANSWER

The Region IV comment leads one to believe that the EAL should be deleted. In a letter dated 1/28/98, NRC also recommended that the NEI Task Force consider deleting CG1 EAL 1. NEI commented (see below) that EAL 1 was considered necessary in order to allow a true evaluation of the three barrier failure criteria for a GE.

Excerpt from

NEI RESPONSE TO NRC STAFF COMMENTS IN LETTER DATED 02/19/99 ON NEI 99-01 Revision 4 (Dated 01/28/98)

8. CG1 General Emergency

- a. Condition 1 should be deleted.

F Comment (022399): ITF disagrees. EAL 1 provides indication of the RCS barrier failure, EAL 2 provides indication of the fuel barrier failure, and EAL3 provides indication of containment barrier failure. Inclusion of all three EALs allows the user to truly compare the EALs against the definition of the General Emergency (e.g. Loss of 2 barriers with the potential or actual loss of the third barrier).

The intent (as described in the basis) of EAL 1 was to provide indication to the ED that the RPV barrier had failed if all means of RPV level indication were lost. NEI still believes that some positive indication of inventory loss is needed to help the ED determine if the RPV barrier has failed if indication of RPV level has been lost. The following clarification is offered:

Existing CG1 EAL 1:

1. Loss of RPV inventory as indicated by unexplained {site-specific} sump and tank level increase.

Proposed CG1 EAL 1:

1. Loss of RPV inventory as indicated by {site specific} level indication method or unexplained {site-specific} sump and tank level increase.

Concerning the Region IV boiloff comment, the basis for EAL 2 clearly indicates that it addresses boiloff concerns.

"EAL 2 represents the inability to restore and maintain RPV level to above the top of active fuel. Fuel damage is probable if RPV level cannot be restored, as available decay heat will cause boiling, further reducing the RPV level." Concerning the Region IV intersystem leakage concern, the NEI task force did consider this possibility when developing this IC. However the task force could not technically develop a leakage path scenario that would result in an RPV level decrease to < TOAF which could not be monitored by either sump or tank level changes in the event of normal RPV level indication loss.

#### NRC RESOLUTION

This issue is adequately addressed by NEI 99-01 and no additional changes to NEI 99-01 are necessary to address this issue.

#### **Comment 8:**

CU8 - This should be an Alert Level IC in light of the Tokaimura tragedy. In cases where an inadvertent criticality were to occur while personnel were in the vicinity of the fuel, evacuation would make it impossible to deal with the issue without calling in additional resources to assist.

#### NEI POSITION/ANSWER

NEI disagrees. NEI 99-01 generic guidance applies to Commercial Nuclear Power Reactors not fuel fabrication facilities. Although not made clear by the US media, Tokaimura is not a Commercial Nuclear Power Reactor facility. Commercial Nuclear Plants have the capability to remotely change chemical poison concentrations to return the fuel to a fully shutdown state in the unlikely event that an inadvertent criticality occurred.



### NRC RESPONSE

The staff believes this concern to be adequately addressed in NEI 99-01. In the event of an accidental criticality, in an operational (as opposed to permanently shutdown) facility, there are other Emergency Action Levels that will result in escalation of the criticality event. For example, AA2, "A Valid (site specific) alarm or reading on one or more of the following radiation monitors: (site specific monitors)

Refuel Floor Area Radiation Monitor  
Fuel Handling Building Ventilation Monitor  
Refueling Bridge Area Radiation Monitor.

Additionally, the event may be escalated via Emergency Director's judgement. For a permanently defueled station, EAL D-AA2 adequately allows escalation of an unusual event to an alert based on unplanned, increasing radiation levels. Also an event at a permanently defueled station may be escalated via Emergency Directors judgement.

### **Comment 9:**

E-AU1 - This IC should provide for an EAL that lists site specific radiation monitoring channels or offsite monitoring systems.

### NEI POSITION/ANSWER

ISFSI radiation readings are not required to be monitored continuously therefore utilities will most likely not install permanent radiation monitoring channels or offsite monitoring systems. Radiation levels will most likely be routinely monitored by qualified individuals equipped with portable radiation monitoring equipment. If a utility were to install permanent monitoring equipment then the utility may choose to place the site specific instrument names in the EAL.

### NRC RESPONSE

No additional changes to NEI 99-01 are necessary to address this issue.

### **Comment 10:**

PWR Fission Product Barrier Reference Table should recognize an unisolable steam break outside the containment as a potential loss of the Containment barrier.

### NEI POSITION/ANSWER

NEI's position continues to be that a faulted SG outside the containment is not a concern unless there is a concurrent rupture on the same generator. Containment barrier EAL 4 will conservatively declare the Containment Barrier lost (Ruptured and Faulted outside). The loss is considered conservative because a ruptured SG would also be considered as a loss of the RCS barrier giving us two losses, i.e...SAE.

If NEI 99-01 was changed to include a potential loss of Containment for a faulted SG outside (e.g. a stuck open Safety Valve or Atmospheric relief) a ruptured SG on any of the other SGs would result in an SAE declaration instead of an ALERT. This would be inappropriate given that there is no threat to the public that warrants SAE declaration.

#### NRC RESOLUTION

The current EAL scheme as documented in NEI 99-01 adequately addresses this comment. The Emergency Director can, at any time, declare an Alert or escalate the event to a higher emergency classification level based on “conditions existing which in the judgement of the Emergency Director warrant declaration of an Alert” (or Site Area or General Emergency). This would allow the Shift Supervisor/Emergency Director to mobilize additional personnel if appropriate.

#### **Comment 11:**

Proposed Initiating Condition 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(c) 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 proposed change to NEI 99-01.

#### **Comment 12:**

The following minor modifications should be made to address general license provisions of 10 CFR 72, Subpart K, General Storage for Storage of Spent Fuel at Power Reactor Sites:

- a) Add “or SAR referenced in the cask(s) Certificate of Compliance and the related NRC Safety Evaluation Report” after the first sentence in the second paragraph of the basis for E-HU1. (NEI 99-01 page 5-E-4)
- b) Delete the fourth paragraph of the basis for E-HU1 since it addresses provisions of site-specific ISFSI Technical Specifications. (NEI 99-01 page 5-E-4)
- c) Add the following at the end of the fifth paragraph in Section E.1 of NEI 99-01, Appendix E, Basis for ISFSI Initiating Conditions (NEI 99-01 page E.2): “10 CFR 72.212(b)(6) requires that a general licensee review its reactor emergency plan to determine if its effectiveness is decreased and make any necessary changes.”

#### NRC RESOLUTION

The staff accepts the proposed changes to NEI 99-01.

#### **Comment 13:**

The parenthetical “(Draft Report for Comment)” following the reference to NUREG-1567 “Standard Review Plan for Spent Fuel Storage Facilities” in the sixth paragraph in Section E.1 of NEI 99-01 Appendix E should be deleted (NEI 99-01 page E.2). The final (NUREG-1567) report was published in March 2000. More significantly, NEI 99-01 Appendix E Section E.1's

references to NUREG-1567 have been invalidated by changes made to the draft report when it was published in final form.

#### NRC RESOLUTION

The draft NUREG-1567 was used as the basis for the development of Appendix E and therefore remains valid as a reference. NUREG-1567 has been revised since its publication in March 2000 to include information that had been inadvertently deleted from the NUREG. NEI should determine the best way to resolve this comment within the NEI 99-01 document ensuring that references are technically consistent with the NUREG version cited.