July 31, 2000

MEMORANDUM TO: Cynthia A. Carpenter, Chief
Generic Issues, Environmental, Financial &
Rulemaking Branch
Division of Reactor Program Management, NRR

FROM: Joseph L. Birmingham, Project Manager**/RA/**
Generic Issues, Environmental, Financial &
Rulemaking Branch
Division of Reactor Program Management, NRR

SUBJECT: SUMMARY OF JULY 14, 2000, PUBLIC MEETING WITH THE NUCLEAR ENERGY INSTITUTE (NEI) AND INDUSTRY ON DRAFT REGULATORY GUIDE DG-1075, "EMERGENCY PLANNING AND PREPAREDNESS FOR NUCLEAR POWER REACTORS," DATED MARCH 2000

On July 14, 2000, NRC staff met with representatives from NEI and industry to discuss comments on DG-1075, "Emergency Planning and Preparedness for Nuclear Power Reactors," dated March 2000. Comments had been received from five utilities and NRC Region IV. Those attending the meeting are listed in Attachment 1.

Randy Sullivan, NRC, began the meeting with introductions and stated that the purpose of the meeting was to review comments from industry and NRC Region IV on DG-1075 and to discuss the actions needed and the schedule for completion of the regulatory guide.

Alan Nelson, NEI, gave a brief history of actions that led to the development of NEI 99-01. He then discussed implementation recommendations for licensees to convert to using NEI 99-01 after it was approved. He indicated that, depending on whether a licensee was converting from using Regulatory Guide-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," or from NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," they would need to seek NRC review and approval. A copy of the implementing recommendations along with a list of licensees using RG-0654 or NUMARC-007 that was distributed by NEI during the meeting is in Attachment 2.

The group then discussed comments from five licensees and Region IV. The comments from the licensees were generally positive and endorsed NEI 99-01. A comment from Virginia Power on Initiating Condition IC E-AU1 indicated that a reference to a "potential criticality event" in dry storage modules or casks should be deleted as such events are not possible. The Virginia Power letter and the NEI comment on IC E-AU1 is in Attachment 3. The comments from Region IV discussed possible improvements or shortcomings in NEI 99-01. NEI had prepared a detailed response to each of the Region IV comments. The staff discussed the Region IV comments and agreed to resolve the comments with Region IV. The Region IV comments and NEI's responses are in Attachment 4.

The group then discussed the schedule for endorsing NEI 99-01. NRC expects to have the comments resolved by about July 21, 2000 and, following completion of required reviews, have the revision approved before the end of the calendar year.

Having discussed all agenda items the meeting was closed.

Project No. 689

Attachments:
1. List of Meeting Attendees
2. NEI Implementation Recommendations and Licensee List
3. Virginia Power Letter with NEI Comment on IC EAU1
4. NEI Response to Comments from NRC Region IV

cc w/atts:: See list

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Distribution: See next page

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KGibson
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RSullivan
DBarss
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JBirmingham

List of Attendees for July 14, 2000 Meeting
Resolution of Comments on DG-1075/NEI 99-01

NAME	ORGANIZATION
Alan Nelson	NEI
Christopher E. Boone	SNC/NEI ITF
Dave Stobaugh	Commonwealth*
Walt Lee	SNC*
Brian Wakeman	Dominion
John B. Costello	Dominion
Kathy Halvey Gibson	NRC/NRR/IOLB
Patricia Milligan	NRC/NRR/IOLB
Randy Sullivan	NRC/NRR/IOLB
Edwin F. Fox	NRC/NRR/IOLB
Dan Barss	NRC/NRR/IOLB
Joe Birmingham	NRC/NRR/RGEB

* via telephone bridge

Region IV Comments and NEI Responses

Generic Comments:

1) This document should also receive a review by NRC's office of Nuclear Materials Safety and Safegaurds 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 POSITON/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.

2) The NRC should specify that licenses 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 POSITON/ANSWER:

The following options should be considered:

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

2) 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)

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 POSITON/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.

3.17.1 Mode Applicability Matrix

Recognition Category C completely replaces Recognition Category S when in Cold Shutdown and Refueling modes. It should be noted that Recognition Category A and H IC/EALs still apply when in Cold Shutdown and Refueling modes. Recognition Category F is not applicable to Cold Shutdown and Refueling modes.

MODE APPLICABILITY MATRIX

	Recognition Category						
Mode	A	C	D	E	F	H	S
Operating	X				X	X	X
Startup	X				X	X	X
Hot Standby	X				X	X	X
Hot Shutdown	X				X	X	X
Cold Shutdown	X	X				X	
Refueling	X	X				X	
Defueled	X	X				X	
None			X	X			

5.3 Site Specific Implementation

The guidance presented here is not intended to be applied to plants as-is. The generic guidance is intended to give the logic for developing site-specific IC/EALs using site-specific IC/EAL presentation methods. Each utility will need to revise the IC/EALs to meet site-specific needs with regard to instrumentation, nomenclature, plant arrangement, and method of presentation, etc. Such revision is expected and encouraged provided that the intent of the generic guidance is retained. Deviations from the intent may be acceptable, but will need to be justified during regulatory review. Items associated with presentation, e.g., format, sequencing of IC/EALs, IC numbering, recognition categories are at the option of the utility.

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 applicalbe ICs/EALs. There should be recognition of at least the same destructive phenomena (earthquake, tornado, fire, etc.) as are recognized for operating reactors.

NEI POSITON/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.

3.15 Permanently Defueled Station IC/EALs

A Permanently Defueled Station is basically a spent fuel storage facility. The spent fuel is stored in a pool of water that serves as both the cooling medium for decay heat and shielding from direct radiation. The primary functions of this pool configuration become the emphasis of emergency classification methodology.

When in the permanently defueled condition, the licensee receives approval for specific emergency planning requirements negotiated with the State and local governmental agencies and the NRC. The source term and relative risks associated with pool storage are the basis for maintaining only an onsite emergency plan. Calculations are provided in the licensing process that quantify radioactive releases associated with plausible accidents.

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 onshift 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.

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 POSITON/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

Comments on Specific ICs:

1) 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 POSITON/ANSWER:
NEI believes that this issue has been adequately addressed by providing detailed discussion. The following excerpt form NEI 99-01, Appendix A provides generic guidance which is expected to be used when developing plant specific IC/EALs.

Excerpt from Appendix A:

In developing the effluent EALs, the NUMARC EAL Task Force elected to use annual average meteorology for establishing effluent monitor EAL thresholds. This decision was based on the following considerations.

- Use of the accident χ/Qs, may be too conservative. For some sites, the difference between the accident χ/Q and the annual average χ/Q can be a factor of 100-1000. With this difference in magnitude, the calculated monitor EALs for AS1 or AG1 might actually be less than the ODCM alarm setpoints, resulting in unwarranted classifications for releases that might be in compliance with ODCM limits.
- The ODCM and the RETS are based in part on annual average χ/Q (non-normalized). ODCMs already provide alarm setpoints based on annual average χ/Q that could be used for AU1 and AA1.
- Use of a χ/Q more restrictive than the χ/Q used to establish ODCM alarm setpoints could create a situation in which the EAL value would be less than the ODCM setpoint. In this case, the operators would have no alarm indication to alert them of the emergency condition.
- Use of one χ/Q value for AU1 and AA1 and another for AS1 and AG1 might result in monitor EALs that would not progress from low to high classifications. Instead, the AS1 and AA1 EALs might overlap.

Plant specific consideration must be made to determine if annual average meteorology is adequately conservative for site specific use. If not one of the two more conservative techniques described above should be selected. It is incumbent upon the licensee to ensure that the selection is properly implemented to provide consistent classification escalation.

The impact of the differences between the assumed annual average meteorology and the actual meteorology depends on the particular EAL.

- For the AU1 and AA1 effluent monitor EALs, there is no impact since the IC and the EALs are based on annual average meteorology by definition.
- For the field survey, perimeter monitor, and dose assessment results EALs in AS1 and AG1, there is no impact since the IC and these EALs are based on actual meteorology.
- For the AS1 and AG1 effluent monitor EALs, there may be differences since the IC is based on actual meteorology and the monitor EALs are calculated on the basis of annual average meteorology or, on a site specific basis, one of the more conservative derivatives of annual average meteorology. This is considered as acceptable in that dose assessments using actual meteorology will be initiated for significant radioactivity releases. Needed escalations can be based on the results of these assessments. As discussed previously, this delay was deemed to be acceptable since in significant release situations, the plant condition EALs should provide the anticipatory classifications necessary for the implementation of offsite protective measures.

2) CG1 - EAL 1 - is unnecessarily restrictive in that it does not account for either the boiloff of RPV inventory due to heatup 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 POSITON/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.

NEI ITF 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 (eg. 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.

Comments on Specific ICs:

3) 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 POSITON/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.

CU8 - Inadvertent Criticality.

1. An UNPLANNED extended positive period observed on nuclear instrumentation.

2. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

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

NEI POSITON/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.

E-AU1 Unexpected Increase in ISFSI Radiation.

1. VALID (site-specific) radiation reading for irradiated spent fuel in dry storage ≥ 2 times the ISFSI Technical Specification limits.

Basis:

This EAL addresses the degradation of irradiated spent fuel stored onsite in dry storage modules or casks. These modules are designed to standards identified in 10 CFR Part 72. The dry storage modules are routinely monitored by site Radiation Protection/Health Physics personnel, such that any degradation would be detected. **Increases in radiation levels may indicate a potential criticality event.** Readings of (site specific dose rate) are indicative of degradation of the irradiated spent fuel or storage cask/module.

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

NEI POSITON/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 (see below) 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, ie...SAE.

4. SG Secondary Side Release with P-to-S Leakage

RUPTURED S/G is also FAULTED outside of containment OR Primary-to-Secondary leakrate greater than 10 gpm with nonisolable steam release from affected S/G to the environment	Not applicable

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 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.