

Emergency Preparedness Outreach Team Message Plan NEI 99-01, “Development of Emergency Action Levels for Non-Passive Reactors,” Revision 6”

NRC endorses revised industry guidance on Emergency Action Levels for nuclear power reactors

On November 16, 2012, the Nuclear Energy Institute (NEI) formally submitted initial draft Revision 6 to NEI 99-01, “Development of Emergency Action Levels for Non-Passive Reactors,” to the U.S. Nuclear Regulatory Commission (NRC) for proposed endorsement. Over the past several years, NEI has been working to revise this document, which provides guidance to licensees and applicants on acceptable methods for complying with NRC’s regulations for emergency response plans and preparedness at nuclear power reactors.

Specifically, NRC regulations (contained in Section 50.47(b)(4) to Title 10, Part 50 of the *Code of Federal Regulations* (10 CFR 50) require the development of a “standard emergency classification and action level scheme ...” This standardization is important as State and local response plans rely on information provided by facility licensees for determinations of initial offsite response measures.” Requiring a standard emergency classification and action level scheme ensures that implementation methods are relatively consistent throughout the industry for a given reactor and containment design, while simultaneously providing an opportunity for a licensee to modify its scheme as necessary to address plant-specific design considerations or preferences.

The NRC has endorsed previous revisions to this guidance document, developed by NEI, as an acceptable method of meeting this requirement. Specifically, the guidance in NEI 99-01 contains a scheme for the classification of emergency events and conditions based on a series of Emergency Classification Levels (ECLs) defined in the guidance document NUREG-0654/FEMA-REP-1, Rev. 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” November 1980. NEI 99-01 provides specific thresholds and criteria, referred to as Emergency Action Levels (EALs), for the classification of events under these ECLs based on system malfunctions, hazardous events, and abnormal radiological conditions.

Over the past several years, NRC staff has held several public meetings with NEI and nuclear power reactor licensees to discuss NRC staff comments regarding the proposed draft Revision 6 to NEI 99-01. In addition, the draft revision was published in the Federal Register (NRC-2012-0240) on October 16, 2012, for a 30-day public comment period as part of the endorsement process, with no comments received. These public discussions culminated in the submittal of an updated Revision 6 to NEI 99-01 on November, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12257A236), for final staff review and endorsement.

NRC staff has performed a regulatory and technical analysis and concluded that NEI 99-01, Revision 6, is an acceptable methodology for developing site-specific emergency classification

schemes. The document does not apply to any specific reactor design, and as such, licensees must still obtain approval by the NRC prior to implementing the EALs at their sites.

Key Points to Note

Revision 6 to NEI 99-01 incorporates lessons learned from recent industry events, as well as enhancements and clarifications identified from developing and implementing site-specific EAL schemes since the last revision, to facilitate more consistent implementation of the EAL guidance. This includes a detailed review of the guidance to re-validate the appropriateness of an EAL based on over 30 years of industry and NRC experience with EAL scheme development and implementation. In addition, the revision incorporates specific lessons learned from the Fukushima Dai-ichi event and recommendations from the recently published NRC study, entitled NUREG/CR-7154, "Risk-Informed Emergency Preparedness Oversight: Evaluation of Emergency Action Levels – A pilot Study of Peach Bottom, Surry and Sequoyah."

While the entire document has undergone changes related to format and structure, the following high-level changes in NEI 99-01, Revision 6, are highlighted below. Additional details can be found in the NRC staff's regulatory and technical analysis (ADAMS ML13008A736).

- Revised all EALs to remove ambiguity, and if necessary, add additional guidance to inform the classification decision to facilitate consistent event classification;
- Added EALs to capture spent fuel pool level events per the lessons-learned from the Fukushima-Daiichi event and consistent with NRC order EA-12-051;
- Added a General Emergency EAL to capture simultaneous losses of power (alternating current (AC) and batteries (DC)) based on the risk-informed EAL study contained in NUREG/CR-7154;
- Relocated some EALs related to natural hazards to the systems categories to allow for limited system availability analysis to occur to help inform the EAL declaration;
- Re-evaluated the EAL set related to automatic reactor shutdown difficulties; and
- Provide additional guidance for the development of EALs for non-passive reactor designs.

NOTE: A "non-passive" reactor design typically has core cooling systems requiring the use of pumps and valves, and as a result, multiple backup electric power sources. "Passive" reactor designs, such as the Advanced Passive (AP) 1000 and Economic Simplified Boiling Water Reactor (ESBWR), rely on features such as gravity feed that do not require electric power to various valves and pumps for core cooling to occur. A separate guidance document NEI 07-01, Methodology for Development of Emergency Action Levels – Advanced Passive Light Water Reactors," was endorsed by the NRC for AP1000 and ESBWR reactor designs.

How to Access

This document is available online in NRC's document system, ADAMS <http://wba.nrc.gov:8080/wba/>, under the following accession number: ML12257A236.

Outreach Planning

Audience

Internal Stakeholders

- Office of Nuclear Security and Incident Response
- Regions (including Regional State Liaison Officers and Emergency Preparedness Inspectors specifically)
- Office of Nuclear Reactor Regulation/DORL
- Office of Congressional Affairs (OCA)
- Office of Public Affairs (OPA)
- Office of Federal and State Materials and Environmental Management Programs

External Stakeholders

- State and local Emergency Management Agencies
- Federal Emergency Management Agency (FEMA)
- Conference of Radiation Control Program Directors
- Federal Radiological Program Coordination Council
- National Emergency Management Association, Radiological Emergency Preparedness Subcommittee

Communication Tools

- Message Plan (advise Regions, OPA, OCA, and FEMA to provide background in support of external stakeholder engagement)
- Emergency Preparedness & Response Newsletter (advise various external stakeholder groups)
- NRC Blog (OPA discretion)
- Press Release (OPA discretion)

Frequently Asked Questions

1. Why is the NRC endorsing a revision to the industry's methodology for developing EALs at this time? Are there deficiencies in the currently endorsed methodology?

While the previous versions are acceptable, this new revision provides clarifications to correct known ambiguities and inconsistencies. In addition, NEI 99-01, Revision 6, incorporates various lessons-learned from recent industry events, insights from NRC staff reviews of EAL scheme change submittals, and recommendations from recent EAL studies (NUREG/CR-7154). The improvements should lead to more uniform application of the guidance and consistency in event classification.

2. Does the revised methodology address lessons-learned from the Fukushima Dai-ichi event?

Yes. Several new EALs were developed to address events similar to those at Fukushima Dai-ichi. These include the loss of water level in the spent fuel pools and the simultaneous loss of both AC and DC power sources.

3. Is guidance provided for proposed small modular reactor designs?

No. Revision 6 of NEI 99-01 specifically excludes being used for small modular reactor designs, as the technologies used in these designs are significantly different. At the current time, the industry has not submitted guidance for EAL scheme development for small modular reactors to the NRC.

4. Will nuclear power plant licensees be required to update existing site-specific EALs to incorporate changes made to EAL methodology in Revision 6 to NEI 99-01?

No. Incorporation of Revision 6 to NEI 99-01 by licensees is voluntary. If a licensee desires to revise their EAL scheme using this guidance, they must submit a license amendment in accordance with Appendix E to 10 CFR 50.

5. Can licensees adopt portions of NEI 99-01, Rev. 6, or are they required to adopt the entire EAL scheme?

Because it's considered to be a significant change from previous revisions, NRC recommends that licensees adopt the entire EAL scheme as presented in NEI 99-01, Rev. 6, with the exception of differences in EALs that would be needed to account for site-specific design consideration. However, licensees may decide to evaluate and implement specific EAL changes identified in NEI 99-01, Revision 6, under 10 CFR 50.54(q).

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