



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 22, 2012

Mr. Paul A. Harden
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 – REQUEST FOR
ADDITIONAL INFORMATION REGARDING PROPOSED EMERGENCY
ACTION LEVEL SCHEME CHANGE USING NUCLEAR ENERGY
INSTITUTE 99-01, REVISION 5 (TAC NOS. ME7823 AND ME7824)

Dear Mr. Harden:

By letter dated December 21, 2011 (Agencywide Document Access and Management System (ADAMS) Accession No. ML11362A317), supplemented by letter dated June 29, 2012 (ADAMS Accession No. ML121840082), FirstEnergy Nuclear Operating Company (FENOC, the licensee), submitted a request for approval of a proposed revision to the Beaver Valley Power Station, Unit Nos. 1 and 2, Emergency Preparedness Plan. The request was submitted pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Appendix E, Section VI.B, and involves replacing the current emergency action level scheme with a scheme based on Nuclear Energy Institute 99-01, Revision 5, "Methodology for Development of Emergency Action Levels."

The U.S. Nuclear Regulatory Commission staff has been reviewing the December 21, 2011, and June 29, 2012, letters and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). The questions were sent via electronic transmission on July 25, 2012, to Mr. Phil Lashley, of your staff. The draft questions were sent to ensure that the questions were understandable, the regulatory basis was clear, and to determine if the information was previously docketed. The draft questions were discussed in a teleconference with your staff on August 15, 2012. It was agreed that a response to this RAI would be submitted by September 28, 2012.

Please contact me at 301-415-2833, if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Peter Bamford". The signature is fluid and cursive, with the first and last names being clearly legible.

Peter Bamford, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure: As stated

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION
BEAVER VALLEY POWER STATION, UNITS 1 AND 2
EMERGENCY ACTION LEVEL SCHEME CHANGE
DOCKET NOS 50-334 AND 50-412

By letters dated December 21, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11362A317), supplemented by letter dated June 29, 2012 (ADAMS Accession No. ML121840082), First Energy Nuclear Operating Company (FENOC) requested prior approval to upgrade the emergency action level (EAL) scheme for the Beaver Valley Power Station, Units 1 and 2 (BVPS).

Since 1992, numerous enhancements and clarification efforts have been made to the generic EAL development guidance. The latest revision to this guidance, Nuclear Energy Institute (NEI) 99-01, Revision 5, "Methodology for Development of Emergency Action Levels" (ADAMS Accession No. ML080450149, the endorsed guidance), was found to be acceptable for use as generic EAL development guidance by the Nuclear Regulatory Commission (NRC) staff by letter dated February 22, 2008 (ADAMS Accession No. ML080430535).

The proposed BVPS EAL scheme was developed using the generic development guidance from NEI 99-01, Revision 5 with numerous differences and deviations based upon design criteria applicable to the site. The application also incorporates certain frequently asked questions (FAQs, see ADAMS Accession Nos. ML120580906 and ML102030330) that the licensee states are applicable to BVPS. Licensee preferences for terminology, format, and other licensee-desired modifications to the generic EAL scheme development guidance provided in NEI 99-01, Revision 5 were also identified in the proposed EAL scheme. In order for the NRC staff to complete its review of the LAR, a response to the following request for additional information (RAI) is requested. All questions below apply to both BVPS Units (1 and 2), unless otherwise noted.

1. Operating experience has demonstrated issues with the ability of some instrumentation to perform over the full range of conditions upon which the EAL is based. For the proposed scheme change, please verify that all values and setpoints can be read on the stated instrumentation. For example, all EAL values should be within the calibrated range (0-100% of scale) of the stated instrumentation and the minimum resolution of the indicator should support the determination being made. Also, please verify that all values and setpoints are derived from installed instrumentation and not handheld portable instrumentation, unless specifically stated.
2. EAL Technical Basis Document – Front Section: The endorsed guidance contains important information necessary to understand the intent of the guidance. Please incorporate Sections 3.9, 3.10, 3.11, 3.12, and 3.13 (all of the information provided) from NEI 99-01, Revision 5 into your site-specific EAL Basis Document or provide a justification as to why the information has not been incorporated.

Enclosure

3. The following definitions are required to be site-specific so as to prevent confusion with classification, as indicated in the endorsed guidance. Provide the site-specific definitions rather than the generic definition provided in the development guidance for: CONFINEMENT BOUNDARY, CONTAINMENT CLOSURE, and PROTECTED AREA.
4. Consistent definitions are expected unless a site-specific basis is provided to justify the change. Provide further justification to support the deviations associated with redefining the definitions of IMMINENT and PROJECTILE, or revise accordingly per the endorsed guidance.
5. Section 4 (page 4-2): The term "emergency classification level (ECL)" has information added to it that states: "...ECL is determined to be met by identifying abnormal conditions and then comparing them to INITIATING CONDITIONS (ICs) through EMERGENCY ACTION LEVELS (EALs) and Fission Product Barrier (FPB) threshold values...." The NRC staff considers an ECL to be declared based upon consideration of all of the following: initiating condition, EAL, operating mode, applicable notes, and applicable bases information. Please justify the wording as provided, or revise accordingly.
6. Section 4 (page 4-4): The second paragraph discusses EALs being predicated on unplanned events. However, this discussion is not in alignment with the staff's position as depicted in the first paragraph of section 3.9 of the endorsed guidance. Provide justification for this deviation, or revise accordingly consistent with the endorsed guidance.
7. Section 4 (page 4-7): The bulleted list of items required for the EAL documentation format does not include the applicable notes that may be required for specific EALs as depicted in the endorsed guidance. Provide justification for not including applicable notes, or revise accordingly consistent with the endorsed guidance.
8. Fission Barrier Matrix:
 - a. Containment Loss 2 (Steam Generator Tube Leakage/Rupture): The NRC staff believes that adding the term "prolonged" to the threshold may delay classification unnecessarily. The interpretation of this term from the endorsed guidance provided by the licensee is not in alignment with the staff's position that the threshold be considered applicable if a primary to secondary leak is greater than 10 gallons per minute. Allowing 4 hours to elapse before this threshold is considered is not the staff's expectation. Provide further justification to support this deviation, or revise accordingly consistent with the endorsed guidance.
 - b. Core Temperature: Provide further justification why one core exit thermocouple greater than the specified value is not sufficient for determining the threshold, versus the 'five hottest' as stated in the proposed EAL scheme, or revise accordingly in each threshold where this occurs.
 - c. Reactor Coolant System [RCS] Potential Loss 1 (RCS Leak Rate): Explain why the term "unisolable" needs to be added to the threshold, or revise accordingly consistent with the endorsed guidance.

- d. Containment Potential Loss 1 and 2 (Core Temperature): Provide further justification for the following, or revise accordingly consistent with the endorsed guidance:
 - i. Why the core exit thermocouple value for Loss 1 is not the same as that from Fuel Clad Loss 1?
 - ii. Why the core exit thermocouple value for Loss 2 is not the same as that from Fuel Clad Potential Loss 1?
 - iii. Why Table F-1: RVLIS [Reactor Vessel Level Instrumentation System] Thresholds is not used in Loss 2?
- 9. EALs RA1 and RU1: The information in the bases, related to the validity of the EAL to an isolated flow path, needs to be incorporated as a note in the EAL and incorporated on the EAL Wallboard(s), or provide further justification for not including this information.
- 10. EAL RA2:
 - a. Incorporate the bases information that contains the actual alarm and indicators needed to declare into this EAL, or justify why it should not be incorporated.
 - b. The information interpreted from NUREG/CR-4982, "Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82," is not considered necessary for EAL #2, nor is it contained in the endorsed guidance. Its inclusion may potentially delay classification while corrective actions are being taken. Delaying classification pending attempts at restoring fuel pool water inventory would be contrary to the EAL and Section 3.12 of the endorsed guidance. Provide further justification for this deviation or revise accordingly, consistent with the endorsed guidance.
- 11. EAL RU2: The use of the High-High alarm on the specified radiation monitors listed in EAL (1b) seems to be more applicable to the Alert classification as defined, rather than the Unusual Event. The expectation for this EAL is to have an unplanned water level drop with indications of increasing radiation levels. Provide further justification for this alarm level or revise accordingly.
- 12. EAL RA3: Since the Central Alarm Station (CAS) is the primary location for control of security related functions, it is unclear why the Secondary Alarm Station (SAS) has been added to Table R3. The original intent was to include the primary locations for accomplishing a function. Justify the wording of the EAL or revise accordingly. Also, please note the instrumentation used for each listed area in the EAL, or justify its omission.
- 13. EAL CA10: The justification for the change(s) uses the proposed (non-endorsed) NEI 99-01, Revision 6 in support of the conclusion. Provide further justification, or revise accordingly, consistent with the endorsed guidance.

14. EAL HS2: Add the typical timing note from the endorsed guidance to the EAL, or provide further justification for omission.

15. EALs HA3.1 and HU3.1: In regards to a seismic event, explain the following:

- a. Can the designated value be read in the control room or does it require remote retrieval?
- b. Does the designated value require special qualification to analyze the information, and if so, is it available 24 hours per day, 7 days per week?
- c. What effect does this instrumentation location and/or analysis have on classification timeliness?

16. EALs HA3 and HU3:

- a. Explain how the list of areas can be susceptible to the specific hazards.
- b. Provide a hazard specific list of applicable areas for these EALs (which could be operating mode dependent), or provide justification that supports these areas being considered for the particular hazard.

17. EAL HA5:

- a. The intent of this EAL is to declare an Alert when access to an area is impeded due to a gaseous event. This EAL is to be declared when an area, already pre-identified as an area where access is required, is subject to a gaseous event that impedes access and would be declared regardless of whether access was required at the present time or not. The areas of concern are limited to those that must be entered for safe operation, safe shutdown, or safe cooldown. If access to the area is unnecessary to operate said equipment, then the table does not need the area listed. Consistent with the endorsed guidance, develop a list of areas applicable to this EAL, or justify why they have not been included. A column on the table for operating mode applicability should be considered.
- b. Revise the wording in the IC and EAL from "prohibited" to "impeded" as this change has been identified for correction in the next revision of the generic EAL scheme development guidance or further justify the existing wording.

18. EAL E-HU1: Add a note to the bases that reflects the security EALs that bound security events at this location, as specified in the endorsed guidance, or provide further justification for omission.

19. EAL SS3 and SA3: Explain whether CONTROLS AREA is the same as "reactor control console," as referenced in the endorsed guidance. The expectation is that only actions taken at the primary reactor control console be credited manual actions.

20. EAL SU9: The bases information has information that excludes classification if letdown is isolated. This information needs to be captured in the EAL or as a note to the EAL, and needs to be on the EAL Wallboard(s).

August 22, 2012

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Site Vice President
FirstEnergy Nuclear Operating Company
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Sincerely,

/ra/

Peter Bamford, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
As stated

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ADAMS Accession Number: ML12208A044

*via email

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