

## BellBendeRAIPEm Resource

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**From:** Canova, Michael  
**Sent:** Thursday, April 11, 2013 9:09 AM  
**To:** Sgarro, Rocco R; 'melanie.Frailer@unistarnuclear.com'; Woodring, Kathryn L; Kirkwood, Jon K  
**Cc:** Segala, John; Goldin, Laura; Lee, Samuel; Stubbs, Angelo; BellBendeRAIPEm Resource; Wright, Megan; Ford, Tanya; Mrowca, Lynn  
**Subject:** Bell Bend COLA - Draft Request for Information No. 126 (RAI No. 126) - SPRA 7061  
**Attachments:** Draft RAI Letter 126 -SPRA 7061.doc

Attached is DRAFT RAI No. 126 for the Bell Bend COL Application. Please contact me at your earliest convenience to identify whether you need a clarifying conference call prior to final issuance of this RAI.

During a call, the schedule for response submittal will need to be established.

If you have any questions, please contact me.

*Michael A. Canova*

Project Manager - Bell Bend COL Application  
Docket 52-039  
EPR Project Branch  
Division of New Reactor Licensing  
Office of New Reactors  
301-415-0737

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## Request for Additional Information 126

DRAFT

Issue Date: 4/10/2013

Application Title: Bell Bend Docket Number 52-039

Operating Company: PPL Bell Bend LLC.

Docket No. 52-039

Review Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation

Application Section:

***This RAI is a supplement to RAI Letter 121, Question 19-21 (eRAI 7061)***

### **19-22**

The NRC staff has been directed by the Commission to implement the Fukushima Near-Term Task Force Recommendations, as presented in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated February 12, 2012. This request for additional information specifically addresses Recommendation 4.2 on Mitigating Strategies, as described in Attachment 2 to Order EA-12-049.

The NRC staff request that you address the following in regards to provision for mitigating strategies required by Fukushima Near-Term Task Force Recommendation 4.2:

### **Applicable Beyond-Design-Basis External Events**

Identify and characterize all the applicable site specific beyond-design-basis external events (e.g., earthquake, high winds, and external flooding ...etc.) that are subject to the mitigation strategies. Identification involves determining whether the type of hazard applies to the site.

Characterization focuses on the likely nature of the challenge (e.g., station blackout and loss of normal access to the ultimate heat sinks) in terms of timing, severity, and persistence. NEI 12-06, Section 4.1, "Site-Specific Identification of Applicable Hazards,"

### **Three-Phase Approach for mitigating Beyond-Design-Basis External Events**

Order EA-12-049 requires a three-phase approach for mitigating beyond design-basis external events. These mitigation strategies must be capable of mitigating a simultaneous loss of all ac power and loss of normal access to the ultimate heat sink and have adequate capacity to address challenges to core cooling, containment, and spent fuel pool (SFP) cooling capabilities at all units on a site. The applicant is requested to identify all the necessary (existing and new) equipment to demonstrate adequate capability to perform the mitigation functions for each of the three phases.

1. For the **Initial Phase**, which requires the use of installed equipment and resources to maintain or restore core cooling, containment and SFP cooling capabilities.
  - a) Explain how the Bell Bend establish adequate capabilities for the specified functions assuming a simultaneous loss of all ac power, with the exception of buses supplied by safety-related batteries through inverters, and loss of normal access to the ultimate heat sink.
  - b) Identify all the installed equipments and resources that are used for (1) core cooling,

- (2) containment function, and (3) SFP cooling during the initial phase.
- c) Determine the duration of the initial phase. Explain the bases for the determination, and identify all the supplemental equipments required to address the issues of station blackout and loss of normal access to the ultimate heat sinks for the duration of the initial phase. Address the availability, and accessibility of these equipments following the external events (e.g., the earthquake, flooding, and high wind condition) including the seismic capability of the power supplies and water sources.
  - d) Identify all the connections between the supplemental equipments and the installed DBE equipments to address the issues of station blackout and loss of normal access to the ultimate heat sinks and how to connect and integrate the supplemental equipments with the installed DBE equipments to perform the specified functions for core cooling, containment function, and SFP cooling respectively. Also discuss protection and accessibility of the connection points so that they remain viable during and after the event.
2. For the **Transition Phase**, during which the heat loads are significantly reduced from the initial phase, but the issues of station blackout and loss of normal access to the ultimate heat sinks remain. Sufficient, portable, onsite equipment and consumables to maintain or restore these functions (core cooling, containment, and SFP cooling) until they can be accomplished with resources brought from off site are required.
- a) Explain how the Bell Bend establish adequate capabilities for the specified functions assuming a simultaneous loss of all ac power, with the exception of buses supplied by safety-related batteries through inverters, and loss of normal access to the ultimate heat sink.
  - b) Identify all the portable, onsite equipment and resources for the transition phase, and demonstrate the adequacy of the capability for each of the three specified functions (e.g., flow rate requirements for core cooling, SFP cooling, and containment function) assuming station blackout and loss of normal access to the ultimate heat sinks remain.
  - c) Determine the duration of the transition phase. Explain the bases for the determination. Describe how to transfer from the initial phase installed equipment to the transition phase equipment.
  - d) Discuss the connections between the supplemental equipments and the installed equipments and how to integrate the supplemental equipments with the installed equipment to perform the required functions for core cooling, containment heat removal, and SFP cooling respectively. Also discuss protection and accessibility of the connection points so that they remain viable during and after the event.
  - e) Discuss the instrumentation and control of the mitigation equipments.
  - f) Following beyond-design-basis events, equipment being relied upon to support the transition phase could be damaged. (1) How would the applicant provide reasonable protection for the associated equipment from external events? (2) How are the required equipment protected from the beyond-design-basis events? Discuss the functional capability of piping, valves, pumps, heat exchangers, power supplies, instrument and controls, and water sources following beyond-design-basis external event.
3. For the **Final Phase**, the heat loads are further reduced from the transition phase. The final phase requires obtaining sufficient offsite resources to sustain critical safety functions indefinitely. NEI 12-06 Section 10 provides guidance. The applicant is requested to define

site-specific FLEX capability and identify the equipment and demonstrate adequate capability for the final phase.

- a) Determine the required coping capability (i.e. heat load, flow rates for (1) core cooling, (2) containment function, and (3) SFP cooling) in the final phase.
- b) Identify all the required offsite equipment and resources for the final phase.
- c) Explain how the offsite equipment will integrate with the onsite equipment to perform the required functions described in the Order.
- d) How soon are the offsite resources required?
- e) Demonstrate how the coping capability (e.g., power supply, water sources) can be sustained indefinitely.

### **FLEX Program**

NRC Order EA-12-049 requires all applicants to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and SFP cooling capabilities following a beyond- design-basis external event.

- a) Describe the guidance and strategies to be used for Bell Bend to fulfill the key safety functions of core cooling, containment integrity, and spent fuel cooling. Include in the discussion the extent that NEI 12-06 will be followed, as well as a description of any alternatives to the NEI 12-06 guidance.
- b) Identify what portions of the FLEX program (NEI 12-06) are applicable, and what portions are not applicable and why not. For the applicable portions, demonstrate how to implement.
- c) Provide an integrated plan regarding key assumptions associated with the implementation of the guidance and strategies required by Order EA-12-049.
- d) Describe the content of the procedures and training, and provide the completion schedule, and proper commitment or license condition in the FSAR.

### **Multi-Unit Concern**

The mitigating strategies were developed in the context of a localized event that was envisioned to challenge portions of a single unit. The event at Fukushima, demonstrate that beyond-design-basis external events may adversely affect multi-units. Please address the multi-unit concern in accordance with NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events."

### **FSAR Revision**

Revise the FSAR to provide a comprehensive discussion to respond to the Order EA-12-049 by addressing all the key issues identified in the above RAIs.