

## NRR-PMDAPEm Resource

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**From:** Thadani, Mohan  
**Sent:** Thursday, January 09, 2014 9:13 AM  
**To:** Tyler, Edmund M (Edmund.Tyler@cengllc.com)  
**Cc:** Jones, Henry; Tiruneh, Nebiyu; Erwin, Kenneth; Harvey, Brad; Miller, Ed; Kuntz, Robert; Flanders, Scott; Bens, Michelle; Chokshi, Niles; Cook, Christopher; Beasley, Benjamin; Morgan, Nadiyah  
**Subject:** RE: RESEND: Calvert Cliffs R2.1 flooding reevaluations: RAls

Mr. Tyler:

The NRC staff is reviewing the Constellation Energy Group's submittal of Calvert Cliff Nuclear Power Plant (CCNPP) Flood Hazard Reevaluation Report and has identified a need for additional information. Please provide your response to the request for additional information (RAI) below within 30 days from the date of this email. If clarification of the RAI is needed please contact me. I will promptly arrange a telecom to discuss any questions.

Best regards,

*Mohan C Thadani*

Senior Project Manager  
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### Calvert Cliffs Flood Hazard Reevaluation Report (FHRR) RAls

#### RAI 1: Local Intense Precipitation Flooding

The licensee is requested to provide electronic versions of the input files used for HEC-HMS analysis in the FHRR related to local intense precipitation analyses.

#### RAI 2: Local Intense Precipitation Flooding

The licensee is requested to provide electronic versions of the input files used for HEC-RAS analysis in the FHRR related to local intense precipitation analyses.

#### RAI 3: Local Intense Precipitation Flooding

The licensee is requested to provide a description of the methods used to incorporate elevation measurements in the flood analysis and the likely magnitude of the errors associated with these elevations. Elevation measurement and conversion is crucial in defining flow parameters such as slope and flowpaths. Staff are also requesting a discussion of the methods used to incorporate elevation measurements in the flood analyses performed using HEC-RAS and HEC-HMS.

#### RAI 4: Local Intense Precipitation Flooding

The licensee is requested to clarify the consistent use of the vertical elevation datum in the FHRR. More specifically, please provide a consistent description of the vertical datums MSL, NGVD29, and their relationship as used in the FHRR

analysis. Estimation of water surface elevations and comparison with established levels flood hazards rely on the consistency of a well defined vertical datum and clear descriptions of correlations between datums if the multiple datums used.

#### RAI 5: River and Stream Flooding

Provide a more detailed discussion of the PMF for the Haul Road and Branch 1 and 2 drainage areas. Since the Haul Road drainage area is adjacent to the site and since Branch 1 and 2 drainage areas are near the site, the staff requests a detailed discussion of the potential for flooding the site from local intense precipitation event (and resulting PMF) in these adjacent areas.

#### RAI 6: Storm Surge Flooding

The licensee's walkdown report submitted as part of Enclosure 4 of the March 12, 2012 50.54(f) letter states the design basis flooding elevation is 27.5 ft MSL (although the walkdown report also notes that both 27.1 ft MSL and 27.5 ft MSL appears in the UFSAR). The FHRR states the design basis is 27.1 ft NGVD 29, however FHRR Table 2.4.3 states the PMSS + Wave Runup is 28.14 ft NGVD. Please describe the apparent contradiction of the site's design basis storm surge height.

#### RAI 7: Integrated Assessment

The March 12, 2012, 50.54(f) letter, Enclosure 2, requests the licensee to perform an integrated assessment of the plant's response to the reevaluated hazard if the reevaluated flood hazard is not bounded by the current design basis. The licensee is requested to provide the applicable flood event duration parameters (see definition and Figure 6 of the Guidance for Performing an Integrated Assessment, JLD-ISG-2012-05) associated with mechanisms that trigger an Integrated Assessment. This includes (as applicable) the warning time the site will have to prepare for the event, the period of time the site is inundated, and the period of time necessary for water to recede off the site for the mechanisms that are not bounded by the current design basis. The licensee is also requested to provide a basis for the flood event duration parameters. The basis for warning time may include information from relevant forecasting methods (e.g., products from local, regional, or national weather forecasting centers).

#### RAI 8: Integrated Assessment

The March 12, 2012, 50.54(f) letter, Enclosure 2, requests the licensee to perform an integrated assessment of the plant's response to the reevaluated hazard if the reevaluated flood hazard is not bounded by the current design basis. The licensee is requested to provide the flood height and associated effects (as defined in Section 9 of JLD-ISG-2012-05) that are not described in the flood hazard reevaluation report for mechanisms that trigger an Integrated Assessment. This includes the following quantified information for each mechanism (as applicable):

- Hydrodynamic loading, including debris,
- Effects caused by sediment deposition and erosion (e.g., flow velocities, scour),
- Concurrent site conditions, including adverse weather
- Groundwater ingress, and
- Other pertinent factors (e.g., waterborne projectiles)

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**Mail Envelope Properties** (Mohan.Thadani@nrc.gov20140109091300)

**Subject:** RE: RESEND: Calvert Cliffs R2.1 flooding reevaluations: RAIs  
**Sent Date:** 1/9/2014 9:13:10 AM  
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**From:** Thadani, Mohan

**Created By:** Mohan.Thadani@nrc.gov

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**Post Office:**

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MESSAGE	5390	1/9/2014 9:13:00 AM

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