

## PMComanchePeakPEm Resource

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**From:** Monarque, Stephen  
**Sent:** Monday, October 25, 2010 5:17 PM  
**To:** John.Only@luminant.com; Donald.Woodlan@luminant.com; cp34-rai-luminant@mnes-us.com; Diane Yeager; Eric.Evans@luminant.com; joseph tapia; Kazuya Hayashi; Matthew.Weeks@luminant.com; MNES RAI mailbox; Russ Bywater  
**Cc:** ComanchePeakCOL Resource; Kallan, Paul  
**Subject:** Comanche Peak RCOL Chapter 3, Section 3.8.4 - RAI Number 185  
**Attachments:** RAI 5092 (RAI 185).docx

The NRC staff has identified that additional information is needed to continue its review of the combined license application. The NRC staff's request for additional information (RAI) is contained in the attachment. Luminant is requested to inform the NRC staff if a conference call is needed.

The response to this RAI is due within **35** calendar days of October 25, 2010.

Note: If changes are needed to the safety analysis report, the NRC staff requests that the RAI response include the proposed changes.

thanks,

Stephen Monarque  
U. S. Nuclear Regulatory Commission  
NRO/DNRL/NMIP  
301-415-1544

**Hearing Identifier:** ComanchePeak\_COL\_Public  
**Email Number:** 1139

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**Subject:** Comanche Peak RCOL Chapter 3, Section 3.8.4 - RAI Number 185  
**Sent Date:** 10/25/2010 5:17:00 PM  
**Received Date:** 10/25/2010 5:17:01 PM  
**From:** Monarque, Stephen

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RAI 5092 (RAI 185).docx	22854	

**Options**

**Priority:** Standard

**Return Notification:** No

**Reply Requested:** No

**Sensitivity:** Normal

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**Recipients Received:**

Request for Additional Information (RAI) No. 5092, COLA Revision 1

RAI Number 185

10/25/2010

Comanche Peak Units 3 and 4  
Luminant Generation Company, LLC.  
Docket No. 52-034 and 52-035  
SRP Section: 03.08.04 - Other Seismic Category I Structures  
Application Section: 3.8.4

QUESTIONS for Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

03.08.04-86

**RAI 3.8.5-86**

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR 50.55a, and Part 50 General Design Criteria (GDC) 2.

In its response to RAI 4542 Question 03.08.04-70 (dated August 9, 2010), Luminant addresses the two parts of the question, Part (a) and Part (b). The answer provided by the Applicant to Part (b) of Question 03.08.04-70 is acceptable. However, the answer to Part (a) is not acceptable. Unlike the structural mass which is independent of the base motion it experiences, the impulsive liquid mass depends on the base motion. More specifically, the distribution of impulsive mass along the height of the tank wall under the horizontal excitation is different from that under the rocking excitation. In the response, the applicant states that NUREG-0800, Standard Review Plan (SRP) 3.7.3 Acceptance Criteria 14 was followed in the analysis, and the analyses use a full three-dimensional model where the vertically acting mass of water is uniformly distributed to the base slab and the horizontally acting impulsive mass of the water is uniformly distributed along the wall height, such that the center of gravity of the impulsive mass is at a height of one-half the water depth. The staff disagrees with the applicant's position. In SRP 3.7.3 Acceptance Criteria 14, the analysis approach that the applicant used is not mentioned. SRP 3.7.3 Acceptance Criteria states that, "Most above-ground fluid-containing vertical tanks do not warrant sophisticated, finite element, fluid-structure interaction analyses for seismic loading." The center of gravity of the impulsive mass depends on the value of liquid height to tank radius ratio. It is not necessary to be at one-half the water depth. Also, the center of gravity of the impulsive mass for the horizontal base excitation is different from that of the rocking base excitation.

The Applicant is requested to provide information that explains how the fluid masses corresponding to the base rocking motion are calculated and included in the model, taking into account the staff's comments cited above.

03.08.04-87

**RAI 3.8.4-86**

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR 50.55a, and Part 50 General Design Criteria (GDC) 2.

In response to the follow-up RAI 4542 Question 03.08.04-74 (dated August 9, 2010), Luminant addressed both parts (b) and (c) of the staff's initial question. The staff considers the response to part (c) of the question to be acceptable. However, the staff finds that the response to part (b) of the question not to be acceptable. In its response to part (b) of the RAI, the applicant states that a discussion of the hydrodynamic fluid modeling and base rocking is provided in its response to Question 03.08.04-70. The staff reviewed the response to Question 03.08.04-70 and considered the response to be not acceptable. As such, the applicant is requested to address the staff's question as stated in RAI 03.08.04-70(b) as it also applies to RAI 03.08.04-74 (b).

03.08.04-88

**RAI 3.8.4-87**

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR 50.55a, and part 50 General Design Criteria (GDC) 2.

In its response to RAI 4542 Question 03.08.04-81 (dated August 9, 2010), Luminant provided information supporting their discussion that the frequency of the tank system does not affect the results of the seismic soil-structure interaction (SSI) response. In its response, the applicant states that three additional tank support stiffness cases were performed to compare the original SSI analysis using the rigid tank support. The staff reviewed the applicant results and concluded that the results did not address the question raised by the staff, concerning the rigid beam assumption used for the tank, not the tank support. Thus, the applicant is requested to provide data for the fundamental frequency of the tank filled with fuel to confirm that the assumption of a rigid tank in the SASSI dynamic analysis is acceptable.