

## PMComanchePeakPEm Resource

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**From:** Monarque, Stephen  
**Sent:** Monday, September 14, 2009 8:49 AM  
**To:** John.Only@luminant.com; Donald.Woodlan@luminant.com; Eric.Evans@luminant.com; cp34-rai-luminant@mnes-us.com; Diane Yeager; joseph tapia; Kazuya Hayashi; Matthew.Weeks@luminant.com; MNES RAI mailbox; Russ Bywater  
**Cc:** Ward, William; ComanchePeakCOL Resource  
**Subject:** Comanche Peak RCOL- Section 3.7.1 - RAI # 55  
**Attachments:** RAI 2876 (RAI 55).doc

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.

The response to this RAI is due within 42 calendar days of September 14, 2009.

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

thanks,

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

**Hearing Identifier:** ComanchePeak\_COL\_Public  
**Email Number:** 604

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**Subject:** Comanche Peak RCOL- Section 3.7.1 - RAI # 55  
**Sent Date:** 9/14/2009 8:49:06 AM  
**Received Date:** 9/14/2009 8:49:08 AM  
**From:** Monarque, Stephen

**Created By:** Stephen.Monarque@nrc.gov

**Recipients:**

"Ward, William" <William.Ward@nrc.gov>  
Tracking Status: None  
"ComanchePeakCOL Resource" <ComanchePeakCOL.Resource@nrc.gov>  
Tracking Status: None  
"John.Only@luminant.com" <John.Only@luminant.com>  
Tracking Status: None  
"Donald.Woodlan@luminant.com" <Donald.Woodlan@luminant.com>  
Tracking Status: None  
"Eric.Evans@luminant.com" <Eric.Evans@luminant.com>  
Tracking Status: None  
"cp34-rai-luminant@mnes-us.com" <cp34-rai-luminant@mnes-us.com>  
Tracking Status: None  
"Diane Yeager" <diane\_yeager@mnes-us.com>  
Tracking Status: None  
"joseph tapia" <joseph\_tapia@mnes-us.com>  
Tracking Status: None  
"Kazuya Hayashi" <kazuya\_hayashi@mnes-us.com>  
Tracking Status: None  
"Matthew.Weeks@luminant.com" <Matthew.Weeks@luminant.com>  
Tracking Status: None  
"MNES RAI mailbox" <cp34-rai@mnes-us.com>  
Tracking Status: None  
"Russ Bywater" <russell\_bywater@mnes-us.com>  
Tracking Status: None

**Post Office:** HQCLSTR02.nrc.gov

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**Options**

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Request for Additional Information (RAI) No. 2876

RAI # 55

9/14/2009

Comanche Peak Units 3 and 4  
Luminant Generation Company, LLC.  
Docket No. 52-034 and 52-035  
SRP Section: 03.07.01 - Seismic Design Parameters  
Application Section: 3.7.1

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

03.07.01-1

**Request for additional information (RAI) 3.7.1-1**

NUREG-0800, Standard Review Plan (SRP) 3.7.1, "Seismic Design Parameters," establishes the criteria the NRC staff will use to evaluate whether an applicant meets the NRC's regulations.

SRP, Section 3.7.1.1.1 provides guidance for developing site-specific ground motion response spectra (GMRS) for sites with soil layers that will be completely excavated to expose competent material. It is stated that GMRS should be specified on an outcrop or a hypothetical outcrop that will exist after excavation and that motions at this hypothetical outcrop should be developed as free-surface motions not as in-column motions. In numerous places throughout Section 3.7 of the Comanche Peak Nuclear Power Plant (CPNPP) Combined license application (COLA), the term "outcrop" is used when describing how ground motions were developed. Define the term "outcrop" as used in the COLA and state whether or not the term has the same meaning, as this term is used throughout COLA Section 3.7 and Appendices 3KK, 3LL, 3MM, and 3NN.

The question is posed because the term can have different meanings depending on the context. In order to evaluate the development GMRS the NRC staff requires clarification.

03.07.01-2

**RAI 3.7.1-2**

NUREG-0800, Standard Review Plan (SRP) 3.7.1, "Seismic Design Parameters," establishes the criteria the NRC staff will use to evaluate whether an applicant meets the NRC's regulations.

In order for the NRC staff to evaluate the suitability of the seismic input, describe in detail how the horizontal and vertical GMRS are developed. At a minimum, the description should include the program used, the output options specified (within versus outcrop motion), the soil column used to generate each spectrum, and the soil properties used to generate each spectrum.

03.07.01-3

**RAI 3.7.1-3**

NUREG-0800, Standard Review Plan (SRP) 3.7.1, "Seismic Design Parameters," establishes the criteria the NRC staff will use to evaluate whether an applicant meets the NRC's regulations.

In order for the NRC staff to evaluate the development of the foundation input response spectra (FIRS), describe in detail how the horizontal FIRS (FIRS1, FIRS2, FIRS3, and FIRS4) and vertical FIRS are generated. At a minimum, the description should include the program used, the output options specified (within versus outcrop motion), the soil column configuration used to generate each spectrum, and the soil properties used to generate each spectrum.

03.07.01-4

**RAI 3.7.1-4**

NUREG-0800, Standard Review Plan (SRP) 3.7.1, "Seismic Design Parameters," establishes the criteria the NRC staff will use to evaluate whether an applicant meets the NRC's regulations.

In Appendix 3LL of the COLA, the damping ratios of 0.4 that are shown in Table 3LL-2 for the Missile Shield Walls and Mission Shield Roof Slab and in Table 3LL-3 for the Service Tunnel Roof and Service Tunnel Inner Walls are inconsistent with the damping ratio of 0.04 shown in Table 3.7.3-1(b) of the US-APWR design certification document and in Table 2 of Regulatory Guide 1.61, "Damping Values for Seismic Design of Nuclear Power Plants." Explain the discrepancy and provide justification for the higher damping values shown in the two tables.

03.07.01-5

**RAI 3.7.1-5**

NUREG-0800, Standard Review Plan (SRP) 3.7.1, "Seismic Design Parameters," establishes the criteria the NRC staff will use to evaluate whether an applicant meets the NRC's regulations.

In appendix 3NN (page 3NN-2) of the CPNPP COLA, it is stated that the minimum design spectra, tied to the shapes of the certified seismic design response spectra (CSDRS) and anchored at 0.1g, define the safe-shutdown earthquake (SSE) design motion for the seismic design of category I structures that is specified as outcrop motion at the top of the limestone at nominal elevation of 782 ft.

10 CFR 50 Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants" requires that the SSE be characterized by free-field ground motion response spectra at the free ground surface and that the horizontal component of the SSE ground motion in the free-field at the foundation level of the structures must be an appropriate response spectrum with a peak ground acceleration (PGA) of at least 0.1g.

Therefore, in accordance with 10 CFR 50 Appendix S, the SSE should be defined at the surface elevation of 822 ft, and it should be demonstrated that the SSE free-field ground motion at the foundation level of 782 ft is represented by an appropriate spectrum with a PGA of at least 0.1g.

The applicant should provide a technical bases and justification for defining the SSE at elevation of 782 ft., and demonstrate that placing the SSE at this elevation is in compliance with Appendix S to 10 CFR Part 50.