

PMComanchePeakPEm Resource

From: Monarque, Stephen
Sent: Monday, September 14, 2009 8:23 AM
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Cc: Ward, William; ComanchePeakCOL Resource
Subject: Comanche Peak RCOL- Section 3.3.1 - RAI # 54
Attachments: RAI 2818 (RAI 54).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
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Request for Additional Information (RAI) No. 2818

RAI # 54

9/14/2009

Comanche Peak Units 3 and 4
Luminant Generation Company, LLC.
Docket No. 52-034 and 52-035
SRP Section: 03.03.01 - Wind Loading
Application Section: 3.3.1 Wind Load

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

03.03.01-1

RAI-2818, Question 11368

In order for the NRC staff to determine whether the selected method can be used to determine the design wind loads for the site-specific Seismic Category I reinforced concrete duct banks (solid) and reinforced concrete chases (hollow) that house the yard piping and conduit in accordance with ASCE/SEI 7-05 requirements, additional information about the method is requested to demonstrate compliance with General Design Criterion (GDC)-2 in 10 CFR 50, Appendix A.

Design wind loads for buildings and other structures, including the Main Wind-Force Resisting Systems (MWFRS) and components, may be determined using one of three procedures defined in ASCE/SEI 7-05, Section 6.1.2. The combined license (COL) applicant may select either Method 1 – Simplified Procedure, Method 2 – Analytical Procedure, or Method 3 – Wind Tunnel Procedure described in ASCE/SEI 7-05 to determine design wind loads for the reinforced concrete duct banks and chases.

The COL applicant is requested to identify and describe the wind load design method used to design the site-specific Seismic Category I reinforced concrete duct banks (solid) and reinforced concrete chases (hollow) that house the yard piping and conduit. This information is needed to allow the NRC staff to evaluate the applicability of the design method for converting wind speed to wind loads on these structures. As such, the COL applicant is requested to provide an analysis that explains:

- The portions of the reinforced concrete duct banks (solid) and reinforced concrete chases (hollow) that house the yard piping and conduit that are affected by wind.
- Which method in ASCE/SEI 7-05 (Method 1, 2, or 3) is used by the COL applicant to design the site-specific Seismic Category I reinforced concrete duct banks (solid) and reinforced concrete chases (hollow) that house the yard piping and conduit.
- The rationale and technical basis for characterizing these structures as either open, partially vented, or enclosed based on definitions in ASCE/SEI 7-05, Section 6.2.

- How these structures satisfy the conditions listed in either ASCE/SEI 7-05, Section 6.4.1.1 for Method 1, Section 6.5.1 for Method 2, or Section 6.6.2 for Method 3, as applicable.

03.03.01-2

RAI-2818, Question 11371

In order for the NRC staff to demonstrate compliance with GDC-2 in 10 CFR 50, Appendix A, the COL applicant is requested to provide additional information about the response characteristics of the Ultimate Heat Sink Related Structures (UHSRS) to wind effects. Specifically, staff needs additional information to determine whether Method 2 can be used to determine the design wind loads for the UHSRS in accordance with ASCE/SEI 7-05, Section 6.5 requirements.

Design wind loads for buildings and other structures, including the Main Wind-Force Resisting Systems (MWFRS) and components, may be determined using one of three procedures defined in ASCE/SEI 7-05, Section 6.1.2. The COL applicant selected Method 2 – Analytical Procedure described in ASCE/SEI 7-05, Section 6.5 to determine design wind loads for the UHSRS. According to this procedure, Method 2 can only be used to design the MWFRS for buildings that satisfy the two conditions defined in ASCE/SEI 7-05, Section 6.5.1. Condition 2 for Method 2 states that the building does not have response characteristics making it subject to across wind loading, vortex shedding, instability due to galloping or flutter; and does not have a site location from which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.

The UHSRS consist of the following Seismic Category I reinforced concrete structures.

- Ultimate Heat Sink (UHS) basins
- UHS cooling tower enclosures
- Essential Service Water System (ESWS) pump houses

The layout and configuration of these site-specific structures exposes certain portions of the UHSRS to wind loads that are determined in accordance with Method 2 requirements defined in ASCE/SEI 7-05. Because building design details are required to determine the suitability of Method 2 for analysis of wind loadings, the COL applicant is requested to provide an analysis showing that the UHSRS do not have response characteristics making them subject to across wind loading, vortex shedding, instability due to galloping or flutter; and do not have a site location from which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration. The COL applicant is also requested to provide the rationale and technical basis for characterizing these structures as either open or partially vented based on definitions in ASCE/SEI 7-05, Section 6.2.