PMComanchePeakPEm Resource

From: Monarque, Stephen
Sent: Friday, October 02, 2009 10:05 AM
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Cc: Ward, William; ComanchePeakCOL Resource
Subject: Comanche Peak RCOLA, Section 3.8.1 - RAI # 106
Attachments: RAI 2990 (RAI 106).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. 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 2, 2009

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
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Request for Additional Information (RAI) No. 2990

RAI # 106

10/2/2009

Comanche Peak Units 3 and 4
Luminant Generation Company, LLC.
Docket No. 52-034 and 52-035
SRP Section: 03.08.01 - Concrete Containment
Application Section: 3.8.1

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

03.08.01-1

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

STD combined license (COL) 3.8(2) in Comanche Peak Nuclear Power Plant (CPNPP) COL FSAR, Subsection 3.8.1.5.1.2, “Prestressing System” (Page 3.8-1), states that “Prestress friction losses of the tendons due to wobble and curvature coefficients used in the analysis will be reconciled with the site-specific tendon system corrosion protection coatings present at the time of prestressing.”

The applicant is requested to provide the following information:

(a) Describe the procedure for reconciling the friction losses with site-specific tendon corrosion protection coatings.
(b) Define the limits on the acceptance criteria to be used to perform these reconciliations.
(c) Describe the recovery actions that may be necessary if reconciliation leads to unacceptable results for actual friction losses.
(d) Describe the procedures for reconciliation of all physical properties of the material and the as-built properties.

03.08.01-2

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

STD COL 3.8(2) in CPNPP COL FSAR, Subsection 3.8.1.5.1.2, “Prestressing System” (Page 3.8-1), discusses friction losses in the prestressing tendons. The NRC staff notes that the horizontal (hoop) prestressing tendons in the pre-stressed concrete containment vessel (PCCV) curve round the entire PCCV and are about 475 ft in length. In addition, the vertical inverted U-shaped prestressing steel tendons for the PCCV extend vertically from the tendon gallery (in the basemat) up the PCCV cylinder and over the dome and down the PCCV cylinder to the opposite tendon gallery, a distance for some of the tendons of about 500 ft.

The applicant is requested to describe the prestressing techniques and procedures to be used in construction of the PCCV. The description should include a discussion of measures to be taken in post-tensioning the prestressing tendons, including the method to be used for determining the friction losses in the tendons. .

03.08.01-3

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

STD COL 3.8(4) in CPNPP COL FSAR, Subsection 3.8.1.6, "Material, Quality Control, and Special Construction Techniques" (Page 3.8-2), states, in part, "All the concrete mix ingredients conform to applicable codes and standards."

The applicant is requested to identify the specific codes and standards that apply.

03.08.01-4

STD COL 3.8(5) in CPNPP COL FSAR, Subsection 3.8.1.6 (Page 3.8-2), states, in part, that "The PCCV design analysis will be revised, prior to start of the PCCV superstructure construction, if the final test results affect the conclusions of the PCCV calculations."

The applicant is requested to:

(a) Define concisely the term "superstructure construction."

(b) What are the criteria to be used to determine if the test results affect the conclusions of the PCCV calculations? Provide the acceptance basis and limits on acceptability of the test results.

03.08.01-5

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

STD COL 3.8(7) in CPNPP COL FSAR, Subsection 3.8.1.6 (Page 3.8-2), states, in part, that "Site-specific aggressivity of the ground water/soil at the CPNPP site is not applicable, as discussed in Chapter 2."

In the U.S. Advanced Pressurized Water Reactor (US-APWR) Design Control Document (DCD), Subsection 3.8.1.6, the 8th paragraph (Page 3.8-24) states, in part, "As required by SRP 3.8.1 (Reference 3.8-7), for plants with nonaggressive ground water/soil (i.e., pH is greater than 5.5, chlorides are less than 500 ppm, and sulfates are less than 1,500 ppm), an acceptable program for normally inaccessible, below-grade concrete walls and basemats is to (1) examine the exposed portions of below-grade concrete for signs of degradation, when excavated for any reason; and (2) conduct periodic site monitoring of ground water chemistry, to confirm that the ground water remains nonaggressive."

The NRC staff is unable to find a description of any program in the CPNPP COL FSAR that meets the requirements stated in the above quote from the US-APWR for the examination of below-grade concrete and the monitoring of changes in the soil aggressivity. The applicant is requested to confirm that such a program will be established and implemented for the CPNPP.

03.08.01-6

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

In STD COL 3.8(14), CPNPP COL FSAR, Section 3.8.1.7, preservice inspection (PSI) is not explicitly described. Is it defined as the initial inservice inspection (ISI) for the PCCV?

The applicant is requested to explain what the PSI is and to provide a detailed description of the proposed PSI.

03.08.01-7

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

In STD COL 3.8(14) in CPNPP COL FSAR, Subsection 3.8.1.7, "Testing and Inservice Inspection Requirements," the 6th bullet (Page 3.8-4) states that "Areas at tendon end anchors, wherever accessible, to inspect for concrete cracking, corrosion protection material leakage, and/or tendon cap deformation."

The applicant is requested to provide the following information:

(a) What constitutes "inaccessibility" of an end anchor?
(b) What are the acceptance criteria to be used for determining that an end anchor is in an acceptable condition?
(c) What fraction of the total number of end anchors is not accessible?
(d) What is the rationale and procedures to be used to assure that inaccessible tendon end anchors not inspected are intact and are in satisfactory condition?
(e) What procedures will be used to correct any unacceptable conditions in the end anchors?

03.08.01-8

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

In STD COL 3.8(14) in CPNPP COL FSAR, Subsection 3.8.1.7, “Testing and Inservice Inspection Requirements,” the 10th bullet (on Page 3.8-4) states “Detensioning tendons and the removal of a wire or strand for inspection for corrosion and testing to measure strength and elongation.”

The applicant is requested to provide the following information:

(a) What are the acceptance criteria to be used for determining that the extent of corrosion of a wire or strand is acceptable?

(b) What are the acceptance criteria for determining that the strength and elongation of a wire or strand are acceptable?

03.08.01-9

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR sections 50.34(f) and 50.55a, and General Design Criteria (GDC) 1, 2, 4, 16, and 50.

In STD COL 3.8(14), CPNPP COL FSAR, Subsection 3.8.1.7, “Testing and Inservice Inspection Requirements,” the last bullet (Page 3.8-4) states “General visual inspection of all accessible concrete surface areas to assess the general structural condition of the containment.”

The applicant is requested to provide the following:

(a) What are the acceptance criteria that will be used to conclude that the concrete surfaces are in an acceptable condition?

(b) What corrective actions would be taken in the event that the concrete surfaces were not in an acceptable condition?