UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 23, 2009

Mr. Rafael Flores
Senior Vice President and
Chief Nuclear Officer
Luminant Generation Company LLC
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING THE PERMANENT ALTERNATE REPAIR CRITERIA LICENSE AMENDMENT REQUEST (TAC NOS. ME1446 AND ME1447)

Dear Mr. Flores:

By letter dated June 8, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091670154), Luminant Generation Company LLC (Luminant, the licensee) submitted a license amendment request to revise Comanche Peak Steam Electric Station, Units 1 and 2, Technical Specification (TS) 5.5.9, "Steam Generator (SG) Program," and TS 5.6.9, "Steam Generator (SG) Tube Inspection Report." The licensee proposed to change the inspection scope, repair, and reporting requirements. The proposed changes would establish permanent alternate repair criteria for portions of the SG tubes within the tubesheet.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the licensee and determined that additional information identified in the enclosure to this letter is needed in order for the NRC staff to complete the review. The draft copy of the request for additional information was provided to Mr. Jack Hicks of your staff via e-mail on July 13, 2009. Luminant did not request further discussion to clarify the request for additional information and agreed to provide the response within 15 days of the date of the letter.

If you have any questions, please fell free to contact me at 301-415-3016.

Sincerely,

Balwant K. Singal

Balwant K. Singal, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosure:
As stated

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REQUEST FOR ADDITIONAL INFORMATION

REGARDING PERMANENT H* ALTERNATE REPAIR CRITERIA

FOR STEAM GENERATOR INSPECTIONS

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-445 AND 50-446

By letter dated June 8, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091670154), Luminant Generation Company LLC (the licensee), submitted a license amendment request (LAR) to revise the Technical Specifications (TS) of Comanche Peak Steam Electric Station (CPSES), Units 1 and 2. The LAR proposed changes to the inspection scope and repair requirements of TS 5.5.9, "Steam Generator (SG) Program," and reporting requirements of TS 5.6.9, "Steam Generator (SG) Tube Inspection Report." The proposed changes would establish permanent alternate repair criteria for portions of the SG tubes within the tubesheet. The TS changes only affect CPSES, Unit 2, but the TS are common to CPSES, Units 1 and 2. The U.S. Nuclear Regulatory Commission (NRC) staff has determined that additional information is needed in order to complete its review. The staff also notes that its review of Reference 1 is still ongoing and NRC staff may have additional questions.

The Westinghouse Electric Company LLC (Westinghouse) document, WCAP-17072-P, Revision 0, "H*: Alternate Repair Criteria for the Tubesheet Expansion Region in Steam Generators with Hydraulically Expanded Tubes (Model D5)" (Reference 1), was submitted with the June 8, 2009, letter, in support of the LAR.

1. Reference 1, page 6-21, Table 6-6: This table contains a number of undefined parameters and some apparent inconsistencies with Table 5-2 on page 5-6. Please define the input parameters in Table 6-6.

2. Reference 1, Section 6.2.2.2: Please explain why the finite element analysis was not run directly with the modified temperature distribution rather than running with the linear distribution and scaling the results?

3. Reference 1, Section 6.2.3: Please explain why radial displacement is the "figure of merit" for determining the bounding segment. Does circumferential displacement not enter into this? Why is the change in tube hole diameter not the "figure of merit"?

4. Reference 1, page 6-70: In Section 6.2.5.3, it is concluded that the tube outside diameter and the tubesheet tube bore inside diameter always maintain contact in the predicted range of tubesheet displacements. However, for tubes with throughwall cracks at the H* distance, there may be little or no net pressure acting on the tube for some distance above H*. In Tables 6-18 and 6-19, the fourth increment in the step that occurs two steps prior to the last step suggests that there may be no contact between the tube

Enclosure

and tubesheet, over a portion of the circumference, for a distance above H*. Is the conclusion in Section 6.2.5.3 valid for the entire H* distance, given the possibility that the tubes may contain throughwall cracks at that location?

5. Reference 1, Section 6.3, page 6-86: Please verify if the previously calculated scale factors and delta D factors in Section 6.3 are conservative for (1) a steam line break (SLB) and a feedwater line break (FLB); (2) an intact divider plate assumption; and (3) all values of primary pressure minus crevice pressure that may exist along the H* distance for intact tubes and tubes with throughwall cracks at the H* distance.

6. Reference 1, page 6-96: Please provide information on how the tube temperature (TT) on page 6-96 was determined. For normal operating conditions, please explain how the TT is assumed to vary as function of elevation.

7. Reference 1, page 6-104, Figure 6-77: Contact pressures for nuclear plants with Model D5 SGs are plotted in Figure 6-77, but it is not clear what operating conditions are represented for the plants shown in the plotted data. Please clarify.

8. Reference 1, page 6-120, Reference 6-5: This reference appears to be incomplete. Please provide a complete reference.

9. Reference 1, page 6-121, Reference 6-15: Table 6-3 in Reference 6-15 (SM-94-58, Revision 1) appears to be inconsistent with Table 6-2 in the same reference. Please explain how the analysis progresses from Table 6-2 to Table 6-3.

10. Reference 1, page 8-9, Figure 8-1: There is an apparent discontinuity in the plotted data of the adjustment to H* for distributed crevice pressure. Please provide any insight you may have as to why this apparent discontinuity exists.

11. Reference 1, page 8-6, Section 8.1.4: Please clarify whether the "biased" H* distributions for each of the four input variables are sampled from both sides of the mean H* value during the Monte Carlo process, or only on the side of the mean H* value yielding an increased value of H*.

12. Reference 1, page 8-14, Figure 8-6: The legend for one of the interactions shown between the coefficient of thermal expansion of the tubesheet (αTS) and Young's modulus of the tubesheet (ETS) appears to contain a typographical error. Please review and verify that all values shown in the legend are correct.

13. Reference 1, page 8-20, Case S-4: Why does the assumption of a 2-sigma value for the coefficient of thermal expansion of the tube (αT) and tubesheet (αTS) to determine a "very conservative biased mean value of H*" conservatively bound the interaction effects between αT and αTS? Please describe how the "very conservative biased mean value of H*," as shown in Table 8-4, was determined.

14. Reference 1, page 8-22, Case M-5: The description for this case seems to correspond to a single tube H* estimate rather than a whole bundle H* estimate. Please explain how the analysis is performed for a whole bundle H* estimate.

15. Reference 1, page 8-22: Case M-5 states, "Interaction effects are included because the 4.237 sigma variations were used that already include the effective interactions among the variables." Case M-5 also states that the 4.237 sigma variations come from Table 8-2; however, Table 8-2 does not appear to include interactions among the variables. Please explain how the 4.237 sigma variations include the effect of interactions among the variables.

16. Reference 1, page 8-22, Case M-6, first bullet: Please verify if the words "divided by 4.237" should appear at the end of the sentence.

17. Reference 1, page 8-23, Case M-7: Please verify if the "2 sigma variation of all variables" was divided by a factor of 2.

18. Reference 1, page 8-23, Case M-7: Please explain how this case includes the interaction effects between the two principal variables, αT and αTS.

19. Reference 1, page 8-25, Table 8-4: Please explain why the mean H* calculated in the fifth case does not require the same adjustments, as noted by the footnotes, that all other cases in the table require.

20. Reference 1, page 8-25, Table 8-4: Please verify the mean H* shown in the last case in the table.

21. Section 8 of Reference 1: The variability of H* with all relevant parameters is shown in Figure 8-3. The interaction between αT and αTS are shown in Figure 8-5. Please explain why the direct relationships shown in these two figures were not sampled directly in the Monte Carlo analysis, instead of the sampling method that was chosen. Also, please explain why the sampling method chosen led to a more conservative analysis than directly sampling the relationships in Figures 8-3 and 8-5.

22. In the June 8, 2009, letter, CPSES commits to monitor for tube slippage as part of the SG tube inspection program. The "due date/event" is prior to the start of refueling outage 2RF12. It is not clear whether the planned monitoring will be performed only once. Please modify the commitment to indicate that the tube slippage will be monitored during every SG tube inspection outage.

23. In the June 8, 2009, letter, CPSES commits to determine the position of the bottom of the expansion transition in relation to the top of the tubesheet and to enter "any significant deviation" into their corrective action program. This is a one-time verification prior to implementation of H*. Please modify the commitment to also include a commitment to notify the NRC staff if significant deviations in the location of the bottom of the expansion transition relative to the top of the tubesheet are detected.

24. Reference 1, page 9-6, Section 9.2.3.1: The FLB heat-up transient is part of the plant design and licensing basis. Thus, it is the NRC staff's position that H* and the "leakage factors," as discussed in Section 9.4, should include consideration of this transient.

Please explain why the proposed H* and leakage factor values are conservative, even with consideration of the FLB heat-up transient.

REFERENCE:

1. WCAP-17072-P, Revision 0, "H*: Alternate Repair Criteria for the Tubesheet Expansion Region in Steam Generators with Hydraulically Expanded Tubes (Model D5)," dated May 2009 (ADAMS Accession Nos. ML091670159, ML091670160, and ML091670161, Proprietary Information. Not Publically Available).

If you have any questions, please fell free to contact me at 301-415-3016.

Sincerely,

/RA/

Balwant K. Singal, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosure:
As stated

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ADAMS Accession No. ML092020579 *Memo dated July 17, 2009

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DATE	7/22/09	7/22/09	7/17/09	7/23/09	7/23/09

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