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U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555
ATTN: David B. Matthews, Director
Division of New Reactor Licensing

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 3 AND 4
DOCKET NUMBERS 52-034 AND 52-035
RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION NO. 2664, 2700, AND 2805

Dear Sir:

Luminant Generation Company LLC (Luminant) hereby submits the attached responses to Requests for Additional Information No. 2664 (CP RAI #12) , No. 2700 (CP RAI #16), and No. 2805 (CP RAI #13) for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. Should you have any questions regarding these responses, please contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com) or me.

The only commitment in this letter is on the attached revised page 6.1-1 of the Final Safety Analysis Report, which states "The coatings program will be implemented prior to procurement of coating materials."

I state under penalty of perjury that the foregoing is true and correct.

Executed on August 24, 2009.

Sincerely,

Luminant Generation Company LLC

for

Rafael Flores

Attachments - 1. Response to Request for Additional Information No. 2664 (CP RAI #12)
2. Response to Request for Additional Information No. 2700 (CP RAI #16)
3. Response to Request for Additional Information No. 2805, Rev. 0 (CP RAI #13)

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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 2664 (CP RAI #12)

SRP Section: 03.05.01.03 – Turbine Missiles

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)

DATE OF RAI ISSUE: 7/12/2009

QUESTION NO.: 03.05.01.03-1

Comanche Peak (CP) Combined License (COL) Item CP COL 3.5(2) in the Comanche Peak, Units 3 and 4 COL, Section 3.5.1.3.2, provides information that states the inspection of the turbine rotor is based on the probability ($P_1 < 1 \times 10^{-5}$ per year) of generating a missile from the US-APWR turbine generator as calculated in the applicable bounding turbine missile analysis report, Mitsubishi Report MUAP-07028, "Probability of Missile Generation from Low Pressure Turbines." This Mitsubishi report is also referenced in the US-APWR DCD, Revision 1, Sections 3.5.1.3 and 10.2.3. However, the NRC staff notes that US-APWR DCD, Section 3.5.1.3 states that failure of the overspeed protection system can produce missiles, while Section 10.2.3 references Mitsubishi Report MUAP-07029, "Probabilistic Evaluation of Turbine Valve Test Frequency," for the analysis of turbine missile generation probability due to the failure of the overspeed protection system. This analysis is used to determine the turbine valve test frequency in order to minimize turbine missiles due to destructive overspeed events caused by the failure of overspeed protection system. Therefore, the applicant is requested to include in the FSAR, that the Mitsubishi Report MUAP-07029, "Probabilistic Evaluation of Turbine Valve Test Frequency," will be used to establish the turbine valve test intervals to maintain $P_1 < 1 \times 10^{-5}$ per year to ensure that the limits as outlined in RG 1.115, "Protection Against Low-Trajectory Turbine Missiles" and SRP Section 3.5.1.3 "Turbine Missiles" are maintained. In addition, the applicant should include in the FSAR the valve test frequency that will be used in order to maintain $P1 < 1 \times 10^{-5}$ per year for the unfavorably oriented turbines for Comanche Peak, Units 3 and 4

ANSWER:

The requested information has been added to FSAR Subsection 3.5.1.3.2. US-APWR DCD Subsections 3.5.1.3.2 and 3.5.5 will be revised as well.

Impact on R-COLA

See attached marked-up FSAR Rev. 0 page 3.5-2.

Impact on S-COLA

None.

Impact on DCD

Changes to the DCD are provided in MHI Letter to the NRC, "Update of Chapter 3 of US-APWR DCD," dated August 19, 2009 (UAP-HF-09426).

10^{-2} per year, which is a more conservative estimate than for a favorably oriented single unit. CPNPP Unit 3 and 4 procedures will be implemented 6 months prior to delivery of the T/G to require inspection intervals established in Technical Report, MUAP-07028-NP, "Probability of Missile Generation From Low Pressure Turbines" (Reference 3.5-17), and to require a turbine valve test frequency per Technical Report, MUAP-07029-NP, "Probabilistic Evaluation of Turbine Valve Test Frequency" (Reference 3.5-18), and other actions to maintain P_1 within acceptable limits as outlined in NUREG-0800, Standard Review Plan (SRP) 3.5.1.3, Table 3.5.1.3-1 (Reference 3.5-7). These inspection intervals maintain the probability of turbine failure resulting in the ejection of turbine rotor (or internal structure) fragments through the turbine casing, P_1, as less than 10^{-5} per year. The acceptable risk rate $P_4 = P_1 \times P_2 \times P_3$ is therefore maintained as less than 10^{-7} per year.

RCOL2_03.05.01.03-1

3.5.1.5 Site Proximity Missiles (Except Aircraft)

CP COL 3.5(3) Replace the paragraph of DCD Subsection 3.5.1.5 with the following.

As described in Section 2.2, no potential site-proximity missile hazards are identified except aircraft, which are evaluated in Subsection 3.5.1.6.

3.5.1.6 Aircraft Hazards

CP COL 3.5(4) Replace the paragraph of DCD Subsection 3.5.1.6 with the following.

The probability of aircraft-related accidents for CPNPP Units 3 and 4 is less than an order of magnitude of 10^{-7} per year for aircraft, airway, and airport information reflected in Subsection 2.2.2.7 and expanded as follows.

- Allowing for an 8 nautical mile wide airway, the plant is at least 2 statute miles beyond the edge of the nearest federal airways.
- The reported average operations of 73 per day (26,645 per year) at Granbury Municipal airport are well below the conservative threshold of 500 D^2 operations per year, where D is the plant-to-airport distance of 10 statute miles.
- Allowing for a 10 nautical mile wide airway, the plant is 2 statute miles beyond the edge of the nearest military flight path.

Since the plant is within 5 statute miles from the nearest edge of military training route VR-158, the probability of an aircraft crashing into the plant (P_{FA}) is estimated in the following manner:

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 2700 (CP RAI #16)

SRP SECTION: 10.03 – Main Steam Supply System

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

DATE OF RAI ISSUE: 7/13/2009

QUESTION NO.: 10.03-1

In Revision 1 of the US-APWR DCD, Mitsubishi (the DCD applicant) added a COL information item for the COL applicants to address the actual throat area of the main steam safety valves (MSSVs). This COL information item is reflected as seventh paragraph in Section 10.3.2.3.2, "Main Steam Safety Valves," Revision 1 of the DCD. Whereas, in CPNPP FSAR Section 10.3.2.3.2, the applicant took a departure from the COL information item and replaced the above COL information item (STD COL Item 10.3(2)) with a statement that the actual throat area for the MSSVs will be determined at the procurement stage.

In order to complete its evaluation of this CPNPP FSAR Section 10.3, the NRC staff requests the applicant provide the design details of these MSSVs, including the valve throat area and design basis functional analysis based on the design parameters provided in Table 10.3.2-2, "Main Steam Safety Valves" (sheet 1 of 3) of the DCD.

ANSWER:

COL Item 10.3(2) was deleted from the US-APWR DCD by the letter "Update of Chapter 5 and Chapter 10 of US-APWR DCD," UAP-HF-09424 dated August 19, 2009. The actual MSSV throat area does not need to be written in the COLA. This parameter is not used in the safety analysis.

FSAR Section 1.8 and 10.3 have been revised to incorporate the DCD change to delete the COL item.

Impact on R-COLA

See attached marked-up FSAR Rev. 0 pages 1.8-55, 10.3-1, and 10.3-4.

Impact on S-COLA

None.

Impact on DCD

None.

Table 1.8-201 (Sheet 46 of 68)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	COL Applicant Item	COL Holder Item	Rationale	
COL 10.3(1)	FAC monitoring program; The Combined License Applicant ~~is to address preparation~~will provide a description of ~~an~~the FAC monitoring program for carbon steel portions of the steam and power conversion systems that contain water or wet steam and are susceptible to erosion-corrosion damage. The description will address consistency with Generic Letter 89-08 and NSAC-202L-R2 and will provide a milestone schedule for implementation of the program.	10.3.6.3	A			DCD_10.03.06-6 CTS-00540 RCOL2_10.03.06-2 DCD_10.03.06-6
COL 10.3(2)	Deleted from the DCD.~~Safety and relief valve information: The Combined License Applicant is to address the actual throat area of the MSSV.~~	~~10.3.2.3.2~~		~~H~~	~~a~~	RCOL2_10.03-1
COL 10.4(1)	Circulating Water System; The Combined License Applicant is to determine the site specific final system configuration and system design parameters for the CWS including makeup water and blowdown.	10.4.5	A			
COL 10.4(2)	Steam Generator Blowdown System; The Combined License applicant is to address the discharge to Waste Water System including site specific requirements.	10.4.8.1 10.4.8.2 10.4.8.5	A			
COL 10.4(3)	Deleted from the DCD.					
COL 10.4(4)	Deleted from the DCD.					
COL 10.4(5)	System Design for Steam Generator Drain; The Combined License applicant is to address the nitrogen or equivalent system design for Steam Generator Drain Mode. (This is dependent on Waste water system design)	10.4.8.2.2.4	A			

10.3 MAIN STEAM SUPPLY SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

~~10.3.2.3.2 Main Steam Safety Valves~~ RCOL2_10.03-1

STD COL 10.3(2) ~~Replace the seventh paragraph in DCD Subsection 10.3.2.3.2 with the following.~~

~~The actual throat area for the Main Steam Safety Valves will be determined at the procurement stage.~~

10.3.6.3 Flow-Accelerated Corrosion (FAC)

STD COL 10.3(1) Replace the fourth paragraph

in DCD Subsection 10.3.6.3 with the following.

10.3.6.3.1 Flow-Accelerated Corrosion (FAC) Monitoring Program

Erosion-corrosion in piping systems is a flow-induced material degradation process. It can affect metallic materials whose corrosion resistance is based on the formation of oxide (protective) surface film. Wear-off destruction of the oxide film by turbulent flow water or steam causes corrosion of the unprotected metal.

The FAC monitoring program analyzes, inspects, monitors, and trends FAC degradation of carbon steel piping and piping components in high-energy systems that carry water or wet steam and are susceptible to erosion-corrosion damage. In addition, the FAC monitoring program ~~considers the information~~addresses the concerns of Generic Letter 89-08 and consistent with the guidelines of ~~industry guidelines~~NSAC-202L-R2. The FAC monitoring program will be established prior to fuel load. RCOL2_10.03.06-1 RCOL2_10.03.06-2 DCD_10.03.06-6

The thrust of the FAC monitoring program is to:

- Conduct appropriate analysis and ~~a limited, but thorough, baseline inspection program~~perform preservice inspection. RCOL2_10.03.06-1 RCOL2_10.03.06-2
- Determine the extent of pipe wall thinning, if any, and repair/replace components as necessary.

10.3.6.3.1.6 Long-Term Strategy

The long-term strategy is to improve the inspection program and to reduce susceptibility of piping components to FAC. An effective long-term monitoring program description is included in the CPNPP Units 3 and 4 FAC Monitoring Program. RCOL2_10.03.06-2

10.3.6.3.1.7 Plant Chemistry

The responsibility for system chemistry is under the purview of the plant chemistry section. The plant chemistry section specifies chemical addition in accordance with plant procedures.

10.3.7 Combined License Information

Replace the content of the DCD Subsection 10.3.7 with the following.

STD COL 10.3(1) ***10.3(1)*** *FAC monitoring program*
This COL item is addressed in Subsection 10.3.6.3

~~STD COL 10.3(2)~~ ***10.3(2)*** *Deleted from the DCD.~~Safety and relief valve information~~*
~~This COL item is addressed in Subsection 10.3.2.3.2~~ RCOL2_10.03-1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 2805, Revision 0 (CP RAI #13)

SRP SECTION: 06.01.02 – Protective Coating System (Paints) – Organic Materials

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)

DATE OF RAI ISSUE: 07/12/2009

QUESTION NO.: 06.01.02-1

Background

In order to ensure compliance with 10CFR 50 Appendix B, NUREG-0800 Standard Review Plan (SRP) Section 6.1.2 provides as the SRP acceptance criteria that a coating system to be applied inside a containment is acceptable if it meets the regulatory positions of Regulatory Guide 1.54 "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants," Revision 1, July 2000, and the standards of ASTM D5144-00 and ASTM D3911-03. SRP Section 6.1.2 states that an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations. The Comanche Peak Nuclear Power Plant combined license application FSAR Section 6.1 incorporated by reference the US-APWR design certification document (DCD) FSAR Section 6.1, including Section 6.1.2 which briefly describes the protective coatings to be applied in containment. US-APWR FSAR Section 6.1.2 states that "With rare and minor exception (e.g., protective coatings on trim pieces, faceplates, and covers) coatings used inside containment are applied in accordance with RG 1.54." However, RG 1.54 states that ASTM D 5144-00 and the other ASTM standards (listed in the regulatory guide) provide guidance on practices and programs that are acceptable to the NRC staff for the selection, application, qualification, inspection, and maintenance of protective coatings applied in nuclear power plants. The US-APWR DCD does not address the standards to be applied to selection, qualification, inspection, or maintenance of the protective coatings. Also, it is important that the protective coatings program is implemented prior to construction so that selection, procurement, and initial application of coatings will be controlled by the appropriate standards.

Requested Information

Luminant is requested to provide a description of the protective coatings program to be implemented at Comanche Peak Nuclear Power Plant, including the following information:

1. A list of the standards to be applied to selection, qualification, inspection, and maintenance of protective coatings, or confirm that these standards will consist of those endorsed by RG 1.54. If standards other than those endorsed by RG 1.54 will be used, justify the use of the alternate standards.

2. The administrative controls to be applied to the program.

3. Provide the schedule for full implementation of the coatings program with respect to major milestones in the construction of the plant; for example, prior to application of coatings, prior to preparation of surfaces to be coated, or prior to procurement of coatings materials.

ANSWER:

1. The DCD will be revised to state that the coatings program follows the ASTM Standards listed in Regulatory Guide 1.54, Rev.1. Revised DCD Subsection 6.1.2 is shown in the amended response to US-APWR DCD RAI No. 365-2774 Revision 1, UAP-HF-09428.

2. Protective coatings will be under the administrative controls established by the coatings program. The description of this coatings program is described in letter UAP-HF-09428 and will be added to DCD Revision 2.

3. The coatings program will be implemented prior to procurement phase.

Impact on R-COLA

FSAR Page 6.1-2 has been marked-up to reflect the changes resulting from the response to US-APWR Question 06.01.02-1 and attached herein.

Impact on S-COLA

None.

Impact on DCD

None.

6.1 ENGINEERED SAFETY FEATURE MATERIALS

This section of the referenced DCD is incorporated by reference with ~~the~~the ~~following~~following departures ~~and/~~and/or supplements. CTS-00642 DCD_06.01.02-1

6.1.2 Organic Materials

DCD_06.01.02-1

STD COL 6.1(7) Replace the last sentence of the fifth paragraph in DCD Subsection 6.1.2 with the following.

Coating program will be developed and implemented prior to procurement phase.

6.1.3 Combined License Information

Replace the content of DCD Subsection 6.1.3 with the following.

STD COL 6.1(7) ***6.1(7)*** *Preparation of a coating program*

This COL item is addressed in Subsection 6.1.2

~~6.1.1.1 Materials Selection and Fabrication~~

MAP-06-002

~~STD COL 6.1(2) Replace the fourth sentence of the fifth paragraph in DCD Subsection 6.1.1.1 with the following.~~

~~An augmented inservice inspection (ISI) program will be developed to ensure the structural integrity of such components during service and will be implemented in accordance with Table 13.4-201.~~

~~6.1.1.2.1 Compatibility of Construction Materials with Core Cooling Coolants and Containment Sprays~~

MAP-06-003

~~STD COL 6.1(3) Replace the fourth sentence of the second paragraph in DCD Subsection 6.1.1.2.1 with the following.~~

~~A program to maintain an inventory of all acids and bases within the containment to aid in control of the pH of the recirculating water will be developed prior to initial fuel load. An as-built tabulation of acids and bases will be prepared to assist in the~~