ComanchePeakCOL Resource

From: Monarque, Stephen
Sent: Friday, March 30, 2012 2:08 PM
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Cc: ComanchePeakCOL Resource; Kallan, Paul
Subject: Comanche Peak RCOL Chapter 9- RAI Number 252 -
Attachments: RAI 6358 (RAI 252).docx

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 **March 30, 2012.**

Note: The NRC staff requests that the RAI response include any proposed changes to the FSAR.

thanks,

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

Request for Additional Information (RAI) No. 6358, COLA Revision 2

RAI Letter Number 252

3/30/2012

Comanche Peak Units 3 and 4
Luminant Generation Company, LLC.
Docket No. 52-034 and 52-035
SRP Section: 09.02.05 - Ultimate Heat Sink
Application Section: 9.2.5

QUESTIONS for Balance of Plant and Technical Specifications Branch (BPTS)

09.02.05-18

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2(3) and 9.2(28) and finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 44, "Cooling Water".

The applicant does not provide an evaluation or discussion in the COL FSAR for possible cooling tower plume interference and recirculation effects with other safety related air intakes and other cooling towers in the vicinity. Specifically, the applicant is requested to address in the FSAR:

- Ultimate Heat Sink (UHS) cooling tower interference (tower effluent being drawn into the air inlet of a downwind tower). This should include interference among all cooling towers at the site, including between units) related to the design performance of the UHS cooling towers.
- Cooling tower plume recirculation effects with other safety-related air intakes at the site.

09.02.05-19

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2(3) and 9.2(28) and finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 44, "Cooling Water". Specifically, the applicant is requested to address in the FSAR:

- UHS piping materials (including the UHS transfer piping material) that are not described in the FSAR. For the UHS piping system, outside the scope of the ESWS, describe the materials to be utilized (carbon or alloy), ASME Code class, and if the system is internal lined and/or has cathodic protection. This FSAR description should be similar to US-APWR DCD and COL FSAR Sections 9.2.1.2.2.5, "Piping".

09.02.05-20

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2(18) finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 44, "Cooling Water". Specifically, the applicant is requested to address in the FSAR:

· The applicant stated in several places (for example FSAR 9.2.5.2.1 and 9.2.5.2.3), that the cooling towers are designed for 12,000 gpm whereas Table 9.2.5-3R, "Ultimate Heat Sink System Design Data," states the design flow rate of the ESWS pumps is 13,000 gpm. This discrepancy needs to be clarified.

· COL FSAR Section 9.2.5.2.2 describes that the UHS transfer pump and the ESW pump from the same basin do not operate simultaneously. Describe what controls are in place, such as interlocks, during quarterly UHS transfer pump testing (COL FSAR Table 3.9-202, "Site-Specific Pump IST Requirements,") that prevent the ESWS pumps from operating simultaneously with the UHS transfer pump; for instance if there were an automatic start signal of the ESWS pumps during a ECCS actuation signal, as described in DCD Section 9.2.1.2.3.2, "Emergency Operations."

- Also describe in the FSAR if the UHS transfer system remains full of water or placed in 'layup' after UHS transfer pump testing and what chemical controls (to prevent pipe wall thinning) are used if extended wet layup conditions is utilized.

09.02.05-21

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2(19) finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 44, "Cooling Water". Specifically, the applicant is requested to address in the FSAR:

· Neither COL FSAR Section 9.2.5 or Section 8.3 clearly states what the power supplies for the UHS transfer pumps, associated pump discharge motor operated valves (MOVs), and associated basin inlet MOVs are based on since no reference drawings, figures, or tables could be found in the COL FSAR. This information should be provided in the FSAR.

· The applicant is requested to discuss how electrical separation will be maintained in the ESW pump house considering there may be multiple trains of safety related power in the same room susceptible to flooding or fire.

· The FSAR for Chapter 14 testing and site-specific ITAAC should clearly describe testing of the UHS transfer pumps and associated MOVs from their safety-related power supplies.

09.02.05-22

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2 (19, 20, and 22) finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 44, "Cooling Water". Specifically, the applicant is requested to address in the FSAR:

· The applicant states two different dimensions for the UHS Basin (approximately 123 ft x 123 ft) in FSAR Section 9.2.5.2.1 and 120 ft X 120 ft in FSAR Section 9.2.5.3. This needs to be clarified.

· FSAR Section 9.2.5 is unclear about what UHS instrumentation is safety related and what has safety grade electrical power. Instrumentation of concern includes:

basin water level, basin water temperature, conductivity, flow/pressure, cooling tower fan vibration, and spray header level switches. Note: Part 10 (ITAAC - Table A.1-2) of the COL only has the UHS basin level and water temp as safety class 1E and seismic category I.

- Figure 9.2.5-1R describes that each UHS basin has two level instruments with high and low alarms. Since the UHS transfer pumps have different power supplies than the ESWS pump in the same pump house, describe the respective power supplies for the redundant UHS basin water level instruments. Since the ESWS A pump is supplied by bus A and the UHS transfer pump A is powered from bus C or D, describe in the FSAR the basis for concluding that, in the event of loss of a single power supply (say A), basin level indication is still available for level determination to operated the UHS transfer pump powered from bus C or D.

- Table 9.2.5-4R, "UHS Failure Modes and Effects Analysis," does not adequately describe the 'safety function' related to the effects on system safety function capability related to the loss of the UHS transfer pumps and discharge/inlet valves.

- Table 9.2.5-4R, "UHS Failure Modes and Effects Analysis," has a valve numbering error, AOV-560 in three places (should be AOV-577).

09.02.05-23

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2(21) finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 2, "Design Basis for Protection Against Natural Phenomena and GDC 44, "Cooling Water". Specifically, the applicant is requested to address in the FSAR:

- Given a possible seismic event, describe if a UHS basin siphon event is possible (drain-down event) from the interconnection from the nonsafety-related normal water basin makeup from the circulating water system (CWS) (Figure 9.2.5-1R).
- Describe how normal make-up from the CWS is isolated during accident conditions to preclude flooding the UHS basins.
- Clarify location of the makeup control valves shown on Figure 9.2.5-1R, since they appear to be between the two cooling towers.

09.02.05-24

This is a follow-up to RAI 3762 (Question 09.02.05-14).

In the applicant's response to this RAI, the applicant provided a FSAR markup of Technical Specifications (TS) 3.7.9, "Ultimate Heat Sink" and Bases. This response has been incorporated into Revision 2 of the Comanche Peak, Units 3 and 4 TS.

The staff finds the Bases associated with Action B.1 in need of clarification. Specifically, TS Action B.1, which describes the actions required for exceeding 95 °F, should describe the reason for the B.1 Action due to the UHS basin water temperature exceeding 93 °F, which is addressed under SR 3.7.9.2 and the LCO Bases.

09.02.05-25

COL FSAR Section 3.6.1.3, "Postulated Failure Associates with Site-Specific Piping," states that there is no site-specific high-energy piping within the protective walls of the ESWPT and UHSRSs and therefore, high-energy pipe breaks are not postulated for site-specific piping within these protective walls. The site-specific moderate-energy piping systems are the ESWS and the fire protection water supply system (FSS).

NUREG-0800, NRC Branch Technical Position 3-3, "Protection Against Postulated Piping Failures in Fluid Systems Outside Containment," Revision 3 states that:

A. General Design Criterion (GDC) 2, "Design Bases for Protections Against Natural Phenomena," requires that SSCs important to safety be designed to withstand the effects of natural phenomena such as earthquakes. The BTP 3-4 does not consider full-circumferential breaks in moderate-energy piping, only through-the-wall cracks.

It is the intent of this design approach that postulated piping failures in fluid systems should not cause a loss of function of essential safety-related systems and that nuclear plants should be able to withstand postulated failures of any fluid system piping outside containment, taking into account the direct results of such failure and the further failure of any single active component, with acceptable offsite consequences.

In NUREG-0800, NRC Branch Technical Position 3-3, Appendix A to J.F. O'Leary Letter of July 12, 1972, C.2.a. the following leakage cracks are postulated at the locations specified by the criteria listed under B.

Moderate-Energy Fluid Systems: a. through-wall leakage cracks in piping and branch runs exceeding a nominal pipe size of 1 inch, where the crack opening is assumed as ½ the pipe diameter in length and 1/2 the pipe wall thickness in width.

COL FSAR Section 3.6, does not specially address the UHS transfer system or classify the UHS transfer system (high-energy or moderate-energy). Since the UHS transfer header system connects all four UHS trains, the staff is unable to determine if the UHS transfer system is designed for through-wall cracks.

Specifically,

1. Describe in the FSAR the 'energy' of the UHS transfer system; reference US-APWR DCD Section 3.6.1.1, "Design Basis", and Table 3.6-1, "High and Moderate Energy Fluid Systems".
2. Describe in the FSAR how the UHS transfer system is designed against postulated piping leak paths in the UHS transfer portions. Also describe the bounding conditions related to piping leak size and locations.
3. Describe in the FSAR the consequences of such a piping leak path in the common UHS, looking at the UHS water transfer between UHS basins, post DBA.
4. Describe in FSAR Table 9.2.5-4R, "UHS Failure Modes and Effects Analysis," this failure mode and the effects on the UHS system safety function.

09.02.05-26

The staff reviewed this COL FSAR supplemental information related to COL Item 9.2(23 & 30) finds that additional information is required to determined compliance with 10 CFR Part 50, GDC 45, "Inspection of Cooling Water System," and 10 CFR Part 50, GDC 46, "Testing of Cooling Water System". Specifically, the applicant is requested to address in the FSAR:

- COL Item 9.2(30) discussion appears to be missing from the Section 9.2.5 (UHS) of the FSAR.