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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
SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
NO. 6358 (SECTION 9.2.5), 6403 (SECTION 14.3.7), AND 6457 (SECTION 14.2)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein supplemental information for the responses to Request for Additional Information (RAI) No. 6358 (CP RAI #252), 6403 (CP RAI #254), and 6457 (CP RAI #257) for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. The supplemental information addresses the essential service water system and the ultimate heat sink.

Should you have any questions regarding the supplemental information, please contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com) or me.

There are no commitments in this letter.

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

Executed on November 12, 2012.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachments:
1. Supplemental Response to Request for Additional Information No. 6358 (CP RAI #252)
2. Supplemental Response to Request for Additional Information No. 6403 (CP RAI #254)
3. Supplemental Response to Request for Additional Information No. 6457 (CP RAI #257)

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NRO

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Attachment 1

Supplemental Response to Request for Additional Information No. 6358 (CP RAI #252)

SUPPLEMENTAL 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.: 6358 (CP RAI #252)

SRP SECTION: 09.02.05 - Ultimate Heat Sink

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

DATE OF RAI ISSUE: 3/30/2012

QUESTION NO.: 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.

SUPPLEMENTAL INFORMATION:

This supplemental response provides updated markups based on NRC feedback regarding the first supplemental response to this question (ML12255A326). The information provided in the first supplemental response remains correct, but FSAR Subsection 9.2.5.2.1 has been clarified. The vertical separation between safety-related system external air intakes, except the UHS/ESW pump house, has been revised from specifically stating an elevation of "36 ft" to stating the range of "19 – 35 ft." In addition, the text was clarified by noting that the intakes on the UHS/ESW pump houses are on the south side of the building, which takes advantage of the prevailing wind from the south to minimize the potential for an interaction between the plume and the pump houses ventilation intakes.

<u>Impact on R-COLA</u>

See attached marked-up FSAR Revision 3 page 9.2-14.

Impact on S-COLA

None; this response is site-specific.

Impact on DCD

None.

humidity and air temperature. The UHS cooling towers are designed and located to accept the expected effects without significant compromise of the functions of the other UHS cooling towers of the same unit and of the UHS cooling towers of the other unit, the Gas Turbine Generator (GTG) safety-related air intakes for both units, and air intakes for safety-related HVAC systems for both units. The cooling tower shape combined with the cooling tower height is designed to achieve an air discharge velocity and height that ensures proper dissipation of the plume which minimizes plume interference and recirculation on the other UHS cooling towers and nearby safety-related air intakes. RCOL2_09.02.05-18 S01

Units 3 and 4 each have four UHS cooling towers located and designed with a shape, height, and spacing that achieves an air discharge velocity and plume height adequate to ensure proper dissipation of the plume. A 2°F recirculation allowance has been added to the wet bulb temperature used for the cooling tower design to account for possible recirculation of the plume into the cooling tower air intake. Additionally, the temperature of the plume exhausted from the cooling towers is higher than the ambient air temperature. This induces natural buoyancy causing the thermal plume to rise under low wind conditions. Higher wind conditions would cause rapid air dispersion and mixing, which would effectively cool the plume. Therefore, both low and high wind conditions aid in minimizing the interference and recirculation effects. The design features, natural plume buoyancy, and wind effects combine to minimize potential adverse effects of cooling tower plume interference and recirculation to the UHS cooling towers.

The following Unit 3 and 4 safety-related systems have external air intakes that could potentially be impacted by UHS cooling tower plumes: gas turbine generator (GTG) combustion air, UHS/ESW pump house ventilation, GTG room ventilation, main control room HVAC, Class 1E electrical room HVAC, and emergency feedwater pump room HVAC. All these intakes except the UHS/ESW pump house are separated from the UHS cooling tower discharge by approximately 360 - 450 ft horizontally and ~~36~~19 - 35 ft vertically. This large spacial separation will allow the plume to dissipate, precluding its entry into the external air intakes. Also, the prevailing wind direction at CPNPP is from the SSE, which will assist in preventing the plume from reaching the air intakes. RCOL2_09.02.05-18 S02

The UHS/ESW pump houses are adjacent to their associated cooling towers, but their ventilation air intakes are 47 feet below the top of the cooling tower outlet. ~~The vertical separation and prevailing wind will~~In addition, the intakes for the pump houses are on the south side of the houses which takes advantage of the prevailing wind from the south direction to minimize the potential for a UHS cooling tower plume to adversely affect the pump house ventilation intakes. RCOL2_09.02.05-18 S02

Units 3 and 4 each have two circulating water system (CWS) mechanical draft cooling towers in addition to the UHS cooling towers. The plume from the closest CWS cooling tower to the UHS cooling tower intake and the UHS/ESW pump house ventilation intake is approximately 600 feet. The Unit 3 and 4 safety-related air intakes identified above are even further away from the closest CWS cooling

SUPPLEMENTAL 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.: 6358 (CP RAI #252)

SRP SECTION: 09.02.05 - Ultimate Heat Sink

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

DATE OF RAI ISSUE: 3/30/2012

QUESTION NO.: 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.

SUPPLEMENTAL INFORMATION:

The original response to this question (ML12163A012) remains correct with the following supplemental information regarding simultaneous operation of the UHS transfer pump and the ESW pump.

The UHS transfer pump and the ESW pump in same pump house are not normally operated at the same time, but that could occur. In such an event, an adverse effect caused by pump suction vortices is not a concern. The current distance between the ESW pump and the UHS transfer pump is 13 ft. (ML12243A456). In general, in the assumed case of a pump that suctions water from the horizontal direction, the distance between the center of the vortex that would be generated and the suction of the pump is obtained by multiplying the suction diameter by 1.5 according to swirling flow problems at intakes. The inner diameter of the ESW pump suction is about 23 inches (~2 ft), hence the distance from the suction to the center of vortex becomes 3 ft (=2 ft × 1.5). The distance from the suction to the center of vortex generated at the UHS transfer pump is even shorter (~1 ft).

The distance between the two pumps is 13 ft, so vortices generated if the two pumps are operated simultaneously would not interfere with each other and the existing calculations for pump vortexing remain valid. Additionally, regarding the case of operating each pump independently, the pumps are designed such that air suction from the water surface would not occur even when the water level of the basin is at the lowest allowable level. FSAR Subsection 14.2.12.1.113 requires pump operation to be verified during preoperational testing. Testing the operation of both pumps simultaneously has been added to FSAR Subsection 14.2.12.1.113.

<u>Impact on R-COLA</u>

See attached marked-up FSAR Revision 3 pages 9.2-17, 14.2-5, 14.2-6, and 14.2-7.

<u>Impact on S-COLA</u>

None; this response is site-specific.

<u>Impact on DCD</u>

None.

stand-by pump, opens the discharge valve slowly after a pre-determined time delay, sweeping out voids from the discharge piping and CT riser and distribution piping.

- The system valve lineup and periodic inservice testing of the idle trains, including testing of the high point vents, help minimize potential voids and water hammer forces.

- ~~Level switches are installed in the vertical piping of the cooling tower spray header to annunciate if system inventory reduction occurs and operator action is required to supply water to the vertical piping.~~ RCOL2_14.02-21 RCOL2_09.02.01-9 S01

Four 100% capacity UHS transfer pumps, one located in each UHS ESW pump house, are provided to transfer cooling water from a non-operating UHS basin to the operating UHS basins when required during accident conditions.

All transfer pumps discharge into a common header which in turn discharges to individual UHS basins. All discharge piping is located in missile protected and tornado/hurricane protected areas. The common discharge header and other UHS system piping are designed to seismic Category I requirements. The piping is located in seismic Category I structures. There is no non-seismic piping in the vicinity of this header, and there are no seismically induced failures. Pipes are protected from tornado missiles and hurricane missiles. The UHS transfer pump(s) operate during accident conditions, during IST in accordance with plant Technical Specifications, during maintenance, and for brief periods during cold weather conditions for recirculation. As the header is normally not in service, deterioration due to flow-accelerated corrosion is insignificant. Transfer of water inventory is required assuming one train/basin of ESW/UHS is out of service (e.g., for maintenance), and a second train is lost due to a single failure. When a transfer pump is in operation, fluid velocity in the header is approximately 5.1 ft/sec. Operating conditions are approximately 20 psig and 95° F. Therefore, header failures are not considered credible.

RCOL2_03.03.02-9
RCOL2_03.03.02-9

The UHS transfer pump is designed to supply 800 gpm flow at a total dynamic head (TDH) of 40 feet. Transfer pump capacity is more than adequate to replenish the maximum water inventory losses from two operating ESWS trains. Minimum available net positive suction head (NPSHA) is approximately 40 feet. This is based on the lowest expected water level of approximately 12 feet in the UHS ESW intake basin and 95° F water temperature. Transfer pump location and submergence level precludes vortex formation. In addition, the transfer pump and the ESW pump from the same basin typically do not operate simultaneously. If the pumps are operated at the same time, there is sufficient distance between the pumps that there is no interaction that could impact the potential for vortexing in either pump. In addition, there is sufficient distance between the center of the potential vortex and the suction pipe that the impact of the potential vortex is not a concern. Although it is not a normal operating condition, the UHS transfer pump and the ESW pump in the same basin may operate simultaneously. Under these conditions the UHS transfer pump and ESW pumps will be able to perform their

RCOL2_09.02.05-20
RCOL2_09.02.05-20 S02
RCOL2_09.02.05-20

STD COL 14.2(10) Add new item after item C.7 in DCD Subsection 14.2.12.1.90 as follows.

8. Verify that local offsite fire departments utilize hose threads or adapters capable of connecting with onsite hydrants, hose couplings, and standpipe risers.

Replace DCD Subsections 14.2.12.1.113 and 14.2.12.1.114 with the following.

STD COL 14.2(10)

14.2.12.1.113 Ultimate Heat Sink (UHS) System Preoperational Test

A. Objectives

1. To demonstrate operation of the UHS cooling towers and associated fans, essential service water (ESW) pumps, ~~and~~ UHS transfer pumps, and associated valves. RCOL2_14.02-16 S01 RCOL2_09.02.05-21 RCOL2_09.02.01-6

2. ~~With the basin at minimum level (end of the 30 day emergency period), to demonstrate that the ESW pumps and the UHS transfer pumps maintain design flow rates.~~ To demonstrate that the ESW pumps and the UHS transfer pumps have adequate NPSH and maintain design flow rates without vortex formation with the basin at minimum level (end of the 30-day emergency period).

3. ~~To demonstrate the operation of the UHS transfer pumps.~~ To demonstrate the operation of the UHS basin water level and temperature sensors, logic, and associated control functions; water chemistry monitors, logic, and associated control functions; ESW pump start logic, interlocks, and associated control functions; ESW pump discharge strainer isolation and backwash valves and valve logic; associated makeup and blowdown equipmen~~and spray header level switches and logic~~. RCOL2_14.02-16 S01 RCOL2_14.02-21 RCOL2_09.02.01-9 S01

4. ~~To demonstrate the operation of the UHS basin water level sensors and basin water level controls, and water chemistry monitors, controls, basin water level logic, and associated blowdown equipment.~~ To demonstrate the absence of any significant water hammer during ESW pump and UHS transfer pump starts and stops. RCOL2_14.02-16 S01 RCOL2_14.02-21

5. To demonstrate the ability of the UHS, in conjunction with the ESWS, CCWS, and RHRS, to cool down the RCS. RCOL2_14.02-20

6. To demonstrate that simultaneous operation of ESW pumps and UHS transfer pumps will not result in vortices that would interfere with each other. RCOL2_09.02.05-20 S02

B. Prerequisites

1. Required construction testing is completed.
2. Component testing and instrument calibration is completed.
3. Test instrumentation is available and calibrated.
4. Required support systems are available.
5. Required system flushing/cleaning is completed.
6. Required electrical power supplies and control circuits are energized and operational.
7. Makeup water to the UHS basins is available.
8. CS/RHRS, CCWS, and ESWS are available during hot functional testing. RCOL2_14.02-20

C. Test Method

1. System component control and interlock circuits and alarms are verified, including cooling tower fan logic, basin water level sensors, temperature sensors, makeup water control, basin process chemical sensors, ~~spray header level switches,~~ blowdown control valves and ESW return line drain valves. RCOL2_14.02-16 S01 RCOL2_09.02.01-9 S01 RCOL2_14.02-21 RCOL2_14.02-21 S01
2. The performance of each ESW pump and UHS transfer pump are monitored as basin water level is decreased to the minimum water level (end of the 30 day emergency period).
3. Basin water level and chemistry controls are monitored during continuous operations in the water level and chemistry control mode using the ESWS blowdown feature.
4. The capability of the ESWS to provide water to the FSS is demonstrated by opening the isolation valves and obtaining a total flow of at least 150 gpm to the hose stations located in the R/B and ESWS pump house while maintaining required ESWS flows and pressures.
5. UHS performance data is monitored during RCS cooldown in conjuction with hot functional testing. RCOL2_14.02-20
6. ESW pump and UHS transfer pump in the same basin are operated simultaneously. The performance of each ESW pump and UHS transfer pump are monitored as basin water level is decreased to the minimum water level (end of the 30 day emergency period) during simultaneous operation of two pumps. RCOL2_09.02.05-20 S02

D. Acceptance Criteria

1. With the basin at minimum level (end of the 30 day emergency period), each ESW pump and UHS transfer pump has adequate NPSH and maintain design flow rates without vortex formation. RCOL2_14.02-21

2. The UHS fans operate as discussed in Subsection 9.2.5, including speed and direction.

3. ~~UHS transfer pumps operate as discussed in Subsection 9.2.5.~~ESW pumps, UHS transfer pumps, associated ~~manual valves and~~ motor-operated valves operate from their associated Class 1E buses as discussed in Subsections 9.2.1 and 9.2.5. RCOL2_09.02.05-21 RCOL2_14.02-21 S02 RCOL2_14.02-21 S01

4. ~~UHS basin water level sensors and basin water level controls, and water chemistry monitors, controls, interlocks and associated blowdown equipment operate as discussed in Subsection 9.2.5.~~The UHS basin water level and temperature sensors, logic, and associated control functions; water chemistry monitors, logic, and associated control functions; ESW pump start logic, interlocks, and associated control functions; ESW pump discharge strainer isolation and backwash valves and valve logic; associated makeup and blowdown equipment~~; and spray header level switches and logic; and electric heat tracing~~ operate as discussed in Subsections 9.2.1 and 9.2.5. RCOL2_14.02-16 S01 RCOL2_14.02-16 S01 RCOL2_14.02-21 RCOL2_09.02.01-9 S01 RCOL2_14.02-21 S01 RCOL2_14.02-21 S02

5. ESWS maintains required flows and pressures while water is provided to the FSS as described in Subsection 9.2.1.3.

6. Significant water hammer does not occur during ESW pump and UHS transfer pump starts and stops. RCOL2_14.02-21

7. The UHS is capable of cooling down the RCS as discussed in Subsections 9.2.1 and 9.2.5. RCOL2_14.02-20

8. With the basin at minimum level (end of 30 day emergency period), significant vibration or cavitation is not observed with each ESW pump and UHS transfer pump during two-pump operation whether vortex exists or not. RCOL2_09.02.05-20 S02

STD COL 14.2(10)

14.2.12.1.114 UHS ESW Pump House Ventilation System Preoperational Test

A. Objectives

1. To demonstrate operation of the UHS ESW pump house ventilation system.

SUPPLEMENTAL 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.: 6358 (CP RAI #252)

SRP SECTION: 09.02.05 - Ultimate Heat Sink

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

DATE OF RAI ISSUE: 3/30/2012

QUESTION NO.: 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).

SUPPLEMENTAL INFORMATION:

The subject of ESW spray riser level switches was not a key discussion in the original response to RAI 252-6358 Question 09.02.05-22 (ML12163A012, 6/7/2012), but marked-up FSAR page 9.2-23 submitted with the response stated "Non safety-related level switches are installed in the vertical piping upstream of the cooling tower spray header to annunciate if system inventory reduction occurs." The level switches were intended to alert operators of the potential for water hammer if water was not present in the ESW spray riser when the ESW pump was started.

The supplemental response to RAI 251 6348 Question 09.02.01-9 (ML12255A326, 9/10/2012) included marked-up FSAR pages 9.2-4, 9.2-17, 9.2-25, 14.2-5, 14.2-6, and 14.2-7, which showed that the ESW spray riser level switches had been deleted because water hammer is prevented by the slow-opening ESW pump discharge MOVs and the ESW spray riser level alarms were unnecessary.

The supplemental response to Question 09.02.05-22 (also in ML12255A326) stated that the original response "remains correct." The supplemental response addressed cooling tower fan vibration instrumentation and did not mention the ESW spray riser level switches. However, because the riser level switches had been deleted, the "remains correct" statement was in error. Additionally, FSAR Rev. 3 Figure 9.2.1-1R was still in the FSAR at that time and included the ESW spray riser level switches.

The ESW spray riser level switches have been deleted. FSAR Figure 9.2.1-1R has been deleted and DCD Figure 9.2.1-1, which does not include the riser level switches, has been incorporated by reference in the FSAR.

Impact on R-COLA

None.

Impact on S-COLA

None; this response is site-specific.

Impact on DCD

None.

Attachment 2

Supplemental Response to Request for Additional Information
No. 6403 (CP RAI #254)

SUPPLEMENTAL 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.: 6403 (CP RAI #254)

SRP SECTION: 14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria

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

DATE OF RAI ISSUE: 4/12/2012

QUESTION NO.: 14.03.07-38

Based on the staff's review of Comanche Peak Nuclear Power Plant Units 3 and 4, Revision 2, Part 10 - ITAAC, Appendix A.1, "Ultimate Heat Sink System (UHSS) and Essential Service Water system (ESWS) (Portions Outside the Scope of the Certified Design)," the applicant is requested to address the following items below.

1. Site-specific ITAAC should clearly describe testing of the UHS transfer pumps and associated MOVs from their various safety-related power supplies.
2. Site-specific ITAAC should clearly describe testing of the ESWS/UHS heat tracing.
3. Site-specific ITAAC should clearly describe testing of the ESWS/UHS freeze protection features (which may include operating the UHS fans in reverse speed).
4. Site-specific ITAAC should clearly describe and conclude that the UHS fans are designed to withstand the effects of design basis tornado differential pressure.
5. Site-specific ITAAC (see ITAAC #18) should clearly describe the UHS is capable of performing its safety function without exceeding the maximum temperature limit of the water in the UHS basin.
6. Site-specific ITAAC should clearly describe that the UHS spray nozzles and orifices are adequately designed with consideration for blockage. Note, US-APWR DCD 9.2.1.2.2 states that the ESWS strainer mess is 3 mm to assure that potential clogging of the cooling tower nozzles is avoided.

SUPPLEMENTAL INFORMATION:

The first supplemental response (ML12269A462) remains correct and the following additional information is provided.

Freezing in the ESW pipe tunnel (ESWPT) and the ESW pipe chase (ESWPC) will not occur because they are buried below grade as shown in FSAR Chapters 1 and 3. The ambient temperature in the ESWPT and the ESWPC will not fall below freezing, but will remain at or above ground temperature. The tunnel is not a closed area, so air can pass through it. The tunnel openings are connected to heated areas in the R/B, PS/B, and UHSRS, and only warm air passes into the tunnel area. Therefore, the water in the tunnel piping will not freeze.

Impact on R-COLA

See attached marked-up FSAR Revision 3 page 9.2-6.

Impact on S-COLA

None; this response is site-specific.

Impact on DCD

None.

- For the ~~E~~exposed safety-related ESW piping in the cooling tower that may be filled with water while the pump is not operating ~~is heat traced. The safety-related heat tracing is activated when the thermostat senses a pre-set low ambient temperature~~, water in the piping is drained to the basin through the drain line by opening the drain valve manually prior to the onset of temperatures that could cause freezing. After draining, the operator closes and locks the drain valve. RCOL2_14.03.07-38 S01

- Freezing in the ESWPT and the ESWPC will not occur because they are buried below grade and the ambient temperature will not fall below freezing. The tunnel and chase will remain at or above ambient ground temperature. RCOL2_14.03.07-38 S02

- In addition, the tunnel is not a closed area, so therefore air can pass through it. The tunnel openings are connected to heated areas in the R/B, PS/B and UHSRS and only warm air passes into the tunnel area. Therefore, the water in the piping in the tunnel is not frozen.

For the thermal overpressure protection of the component cooling water heat exchanger ESW side, the valves located at the component cooling water heat exchanger ESW side inlet and outlet lines are administratively locked open valves. These locked open valves assure protection from the thermal overpressurization due to the erroneous valve operation coincident with the heat input from the component cooling water (CCW) side to ESW side. During backflush operation of the heat exchanger, essential service water flows from the discharge side of the heat exchanger and then exits from the inlet side to the discharge header. The backflush procedure requires opening the bypass valves before closing the isolation valves. The train to be backflushed is identified as a maintenance outage train before backflush commences. Cooling operation is continued and there is no overpressurization. RCOL2_09.02.01-7

CP COL 9.2(7)
CP COL 9.2(29)

Replace the eighteenth paragraph in DCD Subsection 9.2.1.3 with the following:

The non-safety-related portions connected to the CWS blowdown header are automatically isolated by the ESWS Blowdown Main Header Isolation Valve to the CWS blowdown main header, which closes with ECCS actuation signal, undervoltage signal, ESW pump stop signal, or low UHS basin level signal. The supply line to the fire protection water supply system (FSS) is isolated by normally closed manual valves. The positions of these valves are controlled by the Operating and Maintenance Procedures mentioned in Subsection 13.5.2.1 in order to maintain water-tight conditions and prevent inadvertent draining of the ESW.

The blowdown header to the CWS blowdown header, to which the strainer blowdown line for normal power operation use and the UHS basin blowdown line for maintaining acceptable water chemistry are connected, has an isolation valve powered from a Class 1E DC bus. The blowdown header isolation valve ~~is interlocked to~~ closes ~~at~~upon receipt of LOOP signal ~~and~~or ECCS actuation signal RCOL2_14.02-16 S01

Attachment 3

Supplemental Response to Request for Additional Information
No. 6457 (CP RAI #257)

SUPPLEMENTAL 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.: 6457 (CP RAI #257)

SRP SECTION: 14.02 - Initial Plant Test Program - Design Certification and New License Applicants

QUESTIONS for Quality and Vendor Branch 1 (AP1000/EPR Projects) (CQVP)

DATE OF RAI ISSUE: 5/3/2012

QUESTION NO.: 14.02-21

During the review of COL FSAR Section 14.2.12.1.113, "Ultimate Heat Sink (UHS) System Preoperational Test," the NRC staff determined there is incomplete or missing information. Specifically, the applicant is requested to address the following in the FSAR:

1. Testing for water hammer (or lack of a water hammer event) during system pump starts and stops.
2. Testing to ensure the ESWS/UHS void detection system works as designed.
3. UHS transfer pumps operate with various power supplies since pumps and associated motor operated valves get powered from more than one safety bus.
4. Testing of the freeze protection design features associated with the ESWS/UHS.
5. Testing of the UHS transfer pumps for adequate net positive suction head at the lower water level requirements and testing for lack of UHS transfer pump vortexing.
6. Testing of the UHS fans (speed and direction) – missing from acceptance criteria.

SUPPLEMENTAL INFORMATION:

The first supplemental response (ML12269A462) remains correct with one change. On the mark-up of FSAR page 14.2-7, manual valves and heat tracing should not have been listed as part of the acceptance criteria. The page has been corrected.

Impact on R-COLA

See attached marked-up FSAR Revision 3 page 14.2-7.

Impact on S-COLA

This response is site-specific.

Impact on DCD

None.

D. Acceptance Criteria

1. With the basin at minimum level (end of the 30 day emergency period), each ESW pump and UHS transfer pump has adequate NPSH and maintain design flow rates without vortex formation. RCOL2_14.02-21

2. The UHS fans operate as discussed in Subsection 9.2.5, including speed and direction.

3. ~~UHS transfer pumps operate as discussed in Subsection 9.2.5.~~ESW pumps, UHS transfer pumps, associated ~~manual valves and~~ motor-operated valves operate from their associated Class 1E buses as discussed in Subsections 9.2.1 and 9.2.5. RCOL2_09.02.05-21 RCOL2_14.02-21 S02 RCOL2_14.02-21 S01

4. ~~UHS basin water level sensors and basin water level controls, and water chemistry monitors, controls, interlocks and associated blowdown equipment operate as discussed in Subsection 9.2.5.~~The UHS basin water level and temperature sensors, logic, and associated control functions; water chemistry monitors, logic, and associated control functions; ESW pump start logic, interlocks, and associated control functions; ESW pump discharge strainer isolation and backwash valves and valve logic; associated makeup and blowdown equipment~~; and spray header level switches and logic; and electric heat tracing~~ operate as discussed in Subsections 9.2.1 and 9.2.5. RCOL2_14.02-16 S01 RCOL2_14.02-16 S01 RCOL2_14.02-21 RCOL2_09.02.01-9 S01 RCOL2_14.02-21 S01 RCOL2_14.02-21 S02

5. ESWS maintains required flows and pressures while water is provided to the FSS as described in Subsection 9.2.1.3.

6. Significant water hammer does not occur during ESW pump and UHS transfer pump starts and stops. RCOL2_14.02-21

7. The UHS is capable of cooling down the RCS as discussed in Subsections 9.2.1 and 9.2.5. RCOL2_14.02-20

8. With the basin at minimum level (end of 30 day emergency period), significant vibration or cavitation is not observed with each ESW pump and UHS transfer pump during two-pump operation whether vortex exists or not. RCOL2_09.02.05-20 S02

STD COL 14.2(10)

14.2.12.1.114 UHS ESW Pump House Ventilation System Preoperational Test

A. Objectives

1. To demonstrate operation of the UHS ESW pump house ventilation system.