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July 20, 2012

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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION NO. 6456
(SECTION 14.2)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 6456 (CP RAI #256) for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. The RAI addresses testing the ultimate heat sink.

Should you have any questions regarding this response, 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 July 20, 2012.

Sincerely,

Luminant Generation Company LLC

RDWoodlan for

Rafael Flores

Attachment: Response to Request for Additional Information No. 6456 (CP RAI #256)

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NRO

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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.: 6456 (CP RAI #256)

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.: 14.02-20

Based on the NRC staff's review of COL FSAR Section 14.2.12.1.113, "Ultimate Heat Sink (UHS) System Preoperational Test," actual testing of the UHS together with component cooling water system (CCWS), residual heat removal system (RHR), essential service water system (ESWS), and essential chilled water system (ECWS) under a heat load was not found.

The COL applicant is requested to address such testing during hot functional testing (HFT) since the UHS cooling towers are outside the scope of the US-APWR DCD.
Specifically, the applicant should consider:

1. How to verify the ability of the UHS in conjunction with the RHRS, ESWS, and CCWS to perform a plant cooldown during hot functional testing. For instance, a cooldown test could be performed while operating all four RCPs and minimizing steam generator cooling.

2. How to verify that the ESWS-UHS has the capacity to remove the UHS peak heat loads, [reference US-APWR-DCD, Table 9.2.5-1] from the CCWS, ECWS, and the ESW pump mechanical work.

ANSWER:

1. The UHS cooling tower preoperational test is conducted during the RCS cooldown phase of HFT in conjunction with CCWS, RHRS, ECWS and ESWS. RCS temperature and pressure are increased utilizing the heat generated from operating all four reactor coolant pumps. The RCS is then cooled by the steam generators until the RCS reaches approximately 350°F and 400 psig. At this point steam generator cooling is minimized and a single train of the RHRS is placed in operation to continue to cool the RCS. This test is repeated for each UHS train. Heat load from ECWS may not be available in any significant quantity, especially if the test is performed during periods of cool outside temperatures. Luminant has revised FSAR Subsection 14.2.12.1.113 to include the description of the UHS cooling tower heat removal performance test. This testing demonstrates the ability of the UHS to perform a plant cooldown.

2. As stated above, the preoperational test to verify the heat removal capacity of the UHS cooling towers is conducted during the RCS cooldown phase of HFT. However, the UHS peak heat loads described in US-APWR DCD Table 9.2.5-1 cannot be achieved during HFT because there is no decay heat before fuel load. The capacity of the UHS cooling tower at maximum heat load will be verified by analysis using the preoperational test results and performance curves of the cooling towers. A report will be developed per the ITAAC of COLA Part 10, Table A.1-1, Item 7.

Impact on R-COLA

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

Impact on S-COLA

This response is site-specific.

Impact on DCD

None.

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

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). RCOL2_09.02.01-6

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 equipment; and spray header level switches and logic. RCOL2_14.02-16 S01 RCOL2_14.02-21

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

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_14.0 2-20

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, and blowdown control valves. RCOL2_14.0 2-16 S01 RCOL2_14.0 2-21
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_14.0 2-20

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_14.0 2-21
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 and associated 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

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 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

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

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.

B. Prerequisites

1. Required construction testing is completed.
2. Component testing and instrument calibration are completed.
3. Test instrumentation is available and calibrated.
4. Required support systems are available.

C. Test Method

1. Simulate interlock signals for each exhaust fan and unit heater and verify operation and annunciation.