PMComanchePekNPEm Resource

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Sent: Friday, October 29, 2010 2:34 PM
To: Aitken, Diane; Bell, Russ; Biggins, James; Bird, Bobby; Borsh, Gina; Buschbaum, Denny; Bywater, Russell; Caldwell, Jan; Carver, Ronald; Certrec; Ciocco, Jeff; Clouser, Tim; Collins, Elmo; Conly, John; Cosentino, Carolyn; Degeyter, Brock; Evans, Todd; Flores, Rafael; Frantz, Steve; Goldin, Laura; Hamzehee, Hossein; Hoshi, Masaya; Ishida, Mutsumi; Johnson, Michael; Kawai, Katsunori; Kawanago, Shinji; Keithline, Kimberley; Kellenberger, Nick; Koenig, Allan; Kramer, John; Lucas, Mitch; Madden, Fred; Matthews, David; Matthews, Tim; McConaghy, Bill; Monarque, Stephen; Monts, Ashley; Moore, Bill; ComanchePeakCOL Resource; Onozuka, Masanori; Paulson, Keith; Plisco, Loren; Reible, Robert; Rund, Jon; Simmons, Jeff; Singal, Balwant; Sirirat, Nan; Sprengel, Ryan; Takacs, Michael; Tapia, Joe; Tindell, Brian; Turner, Bruce; Volkening, David; Vrahoretis, Susan; Williamson, Alicia; Willingham, Michael; Woodlan, Don
Cc: Hill, Craig
Subject: Impact of RAI 155 Supp on Other RAI Responses
Attachments: TXNB-10076 Supps due to RAI 155 Supp.pdf

Luminant had committed to determine if there were other FSAR or RAI response changes resulting from the use of the extreme 100-year return period temperatures in the supplemental response to RAI 155. This letter submits those additional changes to both RAI responses and FSAR pages. If there are any questions regarding the attached letter, please contact me or contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com).

Thanks,

John Conly

Luminant
COLA Project Manager
(254) 897-5256

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CP-201001419
Log # TXNB-10076

Ref. # 10 CFR 52

October 29, 2010

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 INFORMATION FOR THE RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION NO. 3219 (SECTION 9.4.1), 3230 (SECTION 9.4.5), 3232 (SECTION 9.4.5), AND 4606 (SECTION 2.3.1)

Dear Sir:

Luminant revised the Final Safety Analysis Report (FSAR) to use the 100-year return period maximum and minimum dry bulb temperatures for site calculations in a supplemental response to Request for Additional Information (RAI) No. 4606 (CP RAI #155) (ML102780284). In that submittal, Luminant committed to determine if there were other changes resulting from the use of the extreme temperatures. Submitted herein are those additional changes to both RAI responses and FSAR pages.

The submittal of this letter completes Regulatory Commitment #7811 and there are no new commitments in this letter.

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

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

Executed on October 29, 2010.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachments:
1. Supplemental Response to Request for Additional Information No. 3219 (CP RAI #63)
2. Supplemental Response to Request for Additional Information No. 3230 (CP RAI #110)
3. Supplemental Response to Request for Additional Information No. 3232 (CP RAI #123)
4. Supplemental Response to Request for Additional Information No. 4606 (CP RAI #155)

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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.: 3219 (CP RAI #63)

SRP SECTION: 09.04.01 - Control Room Area Ventilation System

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

DATE OF RAI ISSUE: 9/18/2009

QUESTION NO.: 09.04.01-1

In combined license application (COLA) FSAR subsection 9.4.1.2 and FSAR Table 9.4-201, Luminant assigns a heating coil capacity value of 37 kW to the heaters of the four Main Control Room (MCR) Air Handling Units (AHU).

During its review, using the guidance of NUREG-800 Standard Review Plan (SRP) 9.4.1, the NRC staff found that Luminant did not include a reference in COLA FSAR Section 9.4.8 that would provide the basis and calculations used in the sizing of the heaters (i.e. 37 KW) for the MCR AHU. Luminant is requested to either establish clear performance criteria for the heaters and a means (ITAAC and/or startup testing) of verifying that heaters have been sized adequately or provide the following to justify the value selected.

- What is the basis for the sizing of the heaters?
- What is the design basis MCR temperature that the heaters are designed to maintain? The design basis should be clearly stated in the COLA FSAR.

In order to facilitate confirmatory calculations, please provide the inputs to the design calculations used in the derivation of the heating coil capacity value for the heater of the four MCR AHU.

ANSWER:

The following changes in **bold type** were made to the response (ML093090163) as a result of the supplemental information provided in response to RAI No. 4606 (CP #RAI 155) Question 02.03.01-6 (ML102780284).

Two of four 50% capacity Main Control Room (MCR) air handling units (AHUs) are operated during normal operation and the accident condition (LOCA). The heating requirement is determined by the differential air temperature between the return air temperature from the MCR and the supply air temperature to the MCR. The MCR AHU

heating requirement is calculated by the following equation and is determined by the following design condition.

q = 60 x ρ x Cp x Q x (ti – to) x 1.15 = **253,368** BTU/h (use **254,000** for conservatism)

where,

q : Heating requirement (BTU/h)
ρ : Density (0.075 lb/ft^3)
Cp : Specific heat (0.24 BTU/lb-F)
Q : Total airflow rate across the heating coils (20,000 CFM with two AHU operating)
ti : Supply air temperature (78 deg F)
to : Return air temperature (**67.8** deg F) (Site-specific)
1.15 : Factor for margin

The heating requirement per AHU is **127,000** Btu/h (or **37.2** kW). Thus the MCR AHU heating coil capacity will be **40** kW.

As noted above, the capacity of the MCR AHU heating coils is dependent on the differential air temperature between the return and supply air. The supply air temperature [78 deg F] is determined to maintain the maximum MCR air temperature as described in DCD Table 9.4-1. When the heat loss from the MCR structure is considered, the 18,200 CFM recirculating air from MCR is calculated to be **75.1** deg F. The return air temperature is a site-specific condition based on outside temperature. The site-specific outside air of 1,800 CFM is - **5.0** deg F. The return air mixed with outside air is calculated to be **67.8** deg F. The return air temperature is calculated by the recirculating air from MCR and outside air. The design basis is clearly stated in the modified COLA FSAR (see attached marked-up page).

The capacity of the AHU heating coils is determined based on independent operation from the AHU cooling coils. However, the AHU cooling coils and the AHU electric heating coils could be manually operated at the same time during seasonal change (i.e. spring or autumn season), not exceed the MCR temperature range described in DCD Table 9.4-1.

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 9.4-9.

Impact on DCD

None.

CP COL 9.4(4)

Table 9.4-201 (Sheet 1 of 2)

Equipment Design Data

Main Control Room Air Handling Unit		
Heating Coil Capacity	~~37~~40 kW	RCOL2_09.04.01-1 S01
Auxiliary Building Air Handling Unit		
Cooling Coil Capacity	9,200,000 Btu/hr	
Heating Coil Capacity	4,750,000 Btu/hr (Steam)	
Non-Class 1E Electrical Room Air Handling Unit		
Cooling Coil Capacity	1,330,000 Btu/hr	
Heating Coil Capacity	Non heating	
Main Steam / Feedwater Piping Area Air Handling Unit		
Cooling Coil Capacity	450,000 Btu/hr	
Heating Coil Capacity	9 kW	
Technical Support Center Air Handling Unit		
Cooling Coil Capacity	550,000 Btu/hr	
Heating Coil Capacity	30 kW	
Class 1E Electrical Room Air Handling unit		
Heating Coil Capacity	~~37~~45 kW - Train A, B ~~55~~65 kW - Train C, D	RCOL2_09.04.05-1 S01
Safeguard Component Area Air Handling Unit		
Heating Coil Capacity	~~24~~27 kW	RCOL2_09.04.05-1 S01
Emergency Feedwater Pump (M/D) Area Air Handling Unit		
Heating Coil Capacity	2 kW	
Emergency Feedwater Pump (T/D) Area Air Handling Unit		
Heating Coil Capacity	~~4.5~~6 kW	RCOL2_09.04.05-1 S01

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.: 3230 (CP RAI #110)

SRP SECTION: 09.04.05 - Engineered Safety Feature Ventilation System

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

DATE OF RAI ISSUE: 10/2/2009

QUESTION NO.: 09.04.05-1

This Request for Additional Information (RAI) is necessary for the staff to determine if the application meets the requirements of 10 CFR 52.80(a), and General Design Criteria (GDC) 2, 4, 5, 17, and 60.

In combined license application (COLA), FSAR subsections 9.4.5.2.2, 9.4.5.2.3, 9.4.5.2.4, 9.4.5.2.5 and FSAR Table 9.4-201, Luminant assigns a heating coil capacity values to the heaters of the air handling units for the following systems:

- Class 1E Electrical Room HVAC System;
- Safeguard Component Area HVAC System;
- Emergency Feedwater Pump Area HVAC System; and
- Safety Related Component Area HVAC System

Class 1E power supplies provides the NRC staff assurance of the ability of the engineered safety features (ESF) air handling unit heaters to provide this safety function during and subsequent to postulated accidents, including loss of offsite power.

During its review, per the guidance of NUREG-800 Standard Review Plan (SRP) 9.4.5, the NRC staff found that Luminant did not include in the FSAR a reference section (9.4.8 in the DCD) or references that would provide the bases and calculations used in the sizing of the heaters for these ESF systems' air handling units. As such, Luminant is requested to either establish a clear performance criteria for the heaters and a means (ITAAC and/or startup testing) of verifying that heaters have been sided adequately; or provide the following information to justify the value selected:

- What is the basis for the sizing of the heaters?

- What is the design basis area temperature that the heaters are designed to maintain? The design basis should be clearly stated in the FSAR.

Additionally, in order to facilitate confirmatory calculations, please provide the inputs to the design calculations used in the derivation of the heating coil capacity value for the heater of the four main control room air handling units.

ANSWER:

The only changes made to the response (ML093230704) as a result of the supplemental information provided in response to RAI No. 4606 (CP #RAI 155) Question 02.03.01-6 (ML102780284) are listed in **bold type** in Table 1, “Design Conditions.”

Attachment

Table 1, “Design Conditions”

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 9.4-9 and 9.4-10.

Impact on DCD

None.

Table 1. Design Conditions

		Class 1E Electrical Room AHU A,B train	Class 1E Electrical Room AHU C,D train	Safeguard Component Area AHU	Emergency Feedwater Pump (M/D) AHU	Emergency Feedwater Pump (T/D) AHU	Penetration Area AHU	Annulus Emergency Filtration Unit Area AHU	Charging Pump Area AHU	Component Cooling Water Pump Area AHU	Essential Chiller Unit Area AHU	Spent Fuel Pit pump Area AHU
Input Value	Q (CFM)	40,000	52,000	5,000	2,100	1,300	5,000	1,000	1,000	1,000	1,000	1,500
	tl (deg F)	63.0	63.0	72.0	56.5	65.0	74.0	100.0	75.0	70.0	70.0	70.0
	te (deg F)	**60.1**	**59.7**	**58.6**	**54.1**	**53.9**	**57.0**	**72.0**	**64.0**	**63.0**	**58.0**	**63.0**
Output Value	q (BTU/h)	**144,072**	**213,127**	**83,214**	**6,260**	**17,922**	**105,570**	**34,776**	**13,662**	**8,694**	**14,904**	**13,041**
	q (kW)	**42.2**	**62.5**	**24.4**	**1.8**	**5.3**	**30.9**	**10.2**	**4.0**	**2.5**	**4.4**	**3.8**
	Used Value q (kW)	**45**	**65**	**27**	2	**6.0**	**35**	**12**	6	3	**5**	5

CP COL 9.4(4)

Table 9.4-201 (Sheet 1 of 2)

Equipment Design Data

Main Control Room Air Handling Unit		
Heating Coil Capacity	~~37~~40 kW	RCOL2_09.04.01-1 S01
Auxiliary Building Air Handling Unit		
Cooling Coil Capacity	9,200,000 Btu/hr	
Heating Coil Capacity	4,750,000 Btu/hr (Steam)	
Non-Class 1E Electrical Room Air Handling Unit		
Cooling Coil Capacity	1,330,000 Btu/hr	
Heating Coil Capacity	Non heating	
Main Steam / Feedwater Piping Area Air Handling Unit		
Cooling Coil Capacity	450,000 Btu/hr	
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Technical Support Center Air Handling Unit		
Cooling Coil Capacity	550,000 Btu/hr	
Heating Coil Capacity	30 kW	
Class 1E Electrical Room Air Handling unit		
Heating Coil Capacity	~~37~~45 kW - Train A, B ~~55~~65 kW - Train C, D	RCOL2_09.04.05-1 S01
Safeguard Component Area Air Handling Unit		
Heating Coil Capacity	~~24~~27 kW	RCOL2_09.04.05-1 S01
Emergency Feedwater Pump (M/D) Area Air Handling Unit		
Heating Coil Capacity	2 kW	
Emergency Feedwater Pump (T/D) Area Air Handling Unit		
Heating Coil Capacity	~~4.5~~6 kW	RCOL2_09.04.05-1 S01

CP COL 9.4(4)

Table 9.4-201 (Sheet 2 of 2)

Equipment Design Data

Safety Related Component Area Air Handling Unit		
Penetration Area Air Handling Unit Heating Coil Capacity	~~29~~35 kW	RCOL2_09.04.05-1 S01
Annulus Emergency Filtration Unit Area Air Handling Unit Heating Coil Capacity	~~10~~12 kW	RCOL2_09.04.05-1 S01
Charging Pump Area Air Handling Unit Heating Coil Capacity	6 kW	
CCW Pump Area Air Handling Unit Heating Coil Capacity	3 kW	
Essential Chiller Unit Area Air Handling Unit Heating Coil Capacity	~~4.5~~5 kW	RCOL2_09.04.05-1 S01
SFP Pump Area Air Handling Unit Heating Coil Capacity	5 kW	
Containment Low Volume Purge Air Handling Unit		
Cooling Coil Capacity	190,000 Btu/hr	
Heating Coil Capacity	30 kW	
Containment High Volume Purge Air Handling Unit		
Cooling Coil Capacity	2,820,000 Btu/hr	
Heating Coil Capacity	440 kW	

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.: 3232 (CP RAI #123)

SRP SECTION: 09.04.05 - Engineered Safety Feature Ventilation System

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

DATE OF RAI ISSUE: 10/9/2009

QUESTION NO.: 09.04.05-7

Maintaining Design Basis Temperatures – GDC 4

Section II "Acceptance Criteria" of SRP 9.4.5 for GDC 4 contains the following excerpt: "…The evaluation with respect to GDC 4 also includes evaluation of the adequacy of environmental support provided to structures, systems, and components important to safety located within areas served by the ESFVS."

The "Design Bases" from COL FSAR subsection 9.4.5.1.1.6 "UHS ESW Pump House Ventilation System" reads:

> "The UHS ESW pump house ventilation system provides and maintains the proper environmental conditions within the required temperature range (40 °F – 120 °F) to support the operation of the instrumentation and control equipment and components in the individual UHS ESW pump houses during a design basis accident and LOOP with outside ambient design temperature condition of 0% temperature exceedance values."

During its review of the guidance of NUREG-800 SRP 9.4.5, the NRC staff found that the COL applicant did not include references in FSAR Section 9.4.8 that would provide the bases for the calculations used in sizing the capacities of the heaters and of the exhaust fans the for the UHS ESW Pump House Ventilation System. (Reference: COL FSAR Table 9.4-202 "UHS EXW Pump House System Equipment Design Data").

The applicant is requested to either establish clear performance criteria for the ESW Pump House Ventilation System and a means (ITAAC and/or startup testing) of verifying that heaters have been sided adequately or provide the following information to justify the value selected.

- What is the basis for the sizing of the ventilation system?

In order to facilitate confirmatory calculations please provide the inputs to the design calculations used in the derivation of the sizing of the ventilation system.

- Each of the room heaters has an attendant fan displayed in COL FSAR Figure 9.4.201 "UHS ESW Pump House Ventilation System Flow Diagram". However, FSAR Table 9.4-202 does not list a design specification air flow rate for these unit heater fans. Please explain why there is no air flow rate for these unit heater fans.

- What is the impact on the UHS ESW Pump House room temperature when the effect of a 140ºF UHS Basin temperature (COL FSAR Table 7.5-201) is combined with the effects of the most severe summertime ambient conditions for the plant site and the heat load from the ESW pump motor? What is the expected room temperature in this scenario? Will the ESF equipment within the room remain operable?

Regulatory Guide 1.206 section C.I.9.4.5.1 "Design Bases" reads:

> "The design bases for the air handling and treatment system for areas that house ESF equipment should include the criteria and/or features to ensure the system's performance (i.e., flow rates, temperature limits, humidity limits, filtration) and reliability (i.e., single failure, redundancy, seismic design, environmental qualification) for all modes of operation, including normal, abnormal, and SBO conditions. The design bases should also include requirements for manual or automatic actuation, system isolation, monitoring for radiation, and other controls essential to the performance of the system functions. In addition, the applicant should provide details concerning the means used to protect system vents and louvers from externally and internally generated missiles."

The NRC staff found the "System Description" of COL FSAR subsection 9.4.5.2.6 lacking significant detail when compared to the prescriptive guidance of Regulatory Guide 1.206 section C.I.9.4.5.1 "Design Bases".

SRP 9.4.5 section IV. "Evaluation Findings" permits the staff to perform confirmatory calculations on a select basis to provide reasonable assurance of the plant's overall integrity with respect to safety-related component design. More specifically, section IV reads: "The reviewer verifies that the applicant has provided sufficient information and that the review and calculations (if applicable) support conclusions of the following type to be included in the staff's safety evaluation report. The reviewer also states the bases for those conclusions."

In addition, the NRC staff notes that the "Technical Rationale" section of SRP 9.4.5 provides the reasoning behind the acceptance criteria contained in the SRP. In particular, the staff invokes the following clause from Technical Rationale 2: "…The function of the ESFVS is to provide a suitable and controlled operating environment for engineered safety feature components during normal operation, during adverse environmental occurrences, and during and subsequent to postulated accidents, including loss of offsite power. This requirement is imposed to ensure that engineered safety features function through the course of operating and accident events. In addition, the ESFVS design must withstand dynamic effects associated with postulated accidents.

> Meeting these requirements provides assurance that engineered safety features will not fail to operate as designed, thus providing protection against loss of core cooling and/or containment integrity."

Based on the review requirements and technical rationale of SRP 9.4.5, the staff:

1) requests the COL Applicant provide the level of detail in the FSAR consistent with the guidance of Regulatory Guide 1.206; and

2) requests that the COL Applicant provide, for the purposes of conducting confirmatory calculations, the inputs to design calculations used in the derivation of the heater and exhaust flow capacity values for these components of the UHS ESW Pump House Ventilation System.

ANSWER:

The only changes made to the response (ML093520667) as a result of the supplemental information provided in response to RAI No. 4606 (CP #RAI 155) Question 02.03.01-6 (ML102780284) are listed in **bold type** in Table 1, "Design Conditions" due to the fact that the ventilation system is now designed based on the outside ambient design temperature conditions (-5°F – 115°F) using 100-year return period temperature values.

Attachment

Table 1. "Design Conditions"

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 9.4-11.

Impact on DCD

None.

Table 1. Design Conditions

		ESW Pump Room	Transfer Pump Room
Input value	q_1 (BTU/h)	254,500	**18,087**
	q_2 (BTU/h)	**50,763**	**3,313**
	ΔT_1 (deg F)	**5.0**	**5.0**
	l (in)	24	24
	A (ft^2)	6,372	460
	ΔT_2 (deg F)	45	45
Output value	Q (CFM)	**56,530**	**3,963**
	Used Value Q (CFM)	**57,000**	**4,000**
	q (BTU/h)	161,291	11,644
	q (kW)	47.27	3.41
	Used Value q (kW)	48	3.5

CP COL 9.4(6)

Table 9.4-202

UHS ESW Pump House Ventilation System Equipment Design Data

ESW Pump Room Exhaust Fan	
Number of Fans	4
Equipment Class	3
Seismic Category	I
Airflow Capacity	~~34,000~~57,000 cfm
Fan Type	Propeller
UHS Transfer Pump Room Exhaust Fan	
Number of Fans	4
Equipment Class	3
Seismic Category	I
Airflow Capacity	~~2,400~~4,000 cfm
Fan Type	Propeller
ESW Pump Room Unit Heater	
Number of Units	8 (2 per pump room)
Equipment Class	3
Seismic Category	I
Capacity	24 kW
UHS Transfer Pump Room Unit Heater	
Number of Units	4
Equipment Class	3
Seismic Category	I
Capacity	3.5 kW

RCOL2_09.04.05-7 S01

RCOL2_09.04.05-7 S01

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.: 3232 (CP RAI #123)

SRP SECTION: 09.04.05 - Engineered Safety Feature Ventilation System

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

DATE OF RAI ISSUE: 10/9/2009

QUESTION NO.: 09.04.05-11

Coping with a Station Blackout Event – 10 CFR 50.63

The NRC staff acknowledges that the COL applicant incorporated by reference with no departures or supplements DCD subsection 8.4 “Station Blackout”.

The information contained within DCD Table 8.3.1-6 “Electrical Load Distribution – AAC GTG Loading (SBO Condition)” indicates that one Essential Service Water Pump (i.e. ESW pump) will be required to be in operation for the duration of the 8-hour coping event. Phase “3” (i.e. “After AAC GTG has restored power to the Class 1E power system within 60 minutes of the start of the event) of DCD subsection 8.4.2.1.2 “Station Blackout Coping Analysis” indicates that the supporting systems will include I&C, cooling system & HVAC. The NRC staff observes that three Motor Control Centers (MCCs) listed Table 8.3.1-6 would have to be of sufficient size to absorb the power requirements of the UHS ESW Pump House Ventilation System (i.e. heaters, exhaust fans, instrumentation and controls)

Based on the above:

1) The NRC staff requests additional information about this scenario. In particular, whether the COL applicant has determined that the electrical sizing of the 3 MCCs relative to all miscellaneous Comanche Peak 3 (or 4) SBO loads is bounded by the electrical capacity of the three MCCs listed in Table 8.3.1-6. These miscellaneous loads would come from not only the UHS ESW Pump House Ventilation System but from other HVAC systems and cooling systems.

2) The staff notes that per COL FSAR subsection 9.4.5.1.1.6, the required temperature range of the ESW pump house is 40ºF -- 120ºF. DCD subsection 8.4.2.1.2 indicates that all Class 1E electrical cabinets and I&C cabinets are rated to keep their integrity up to 50ºC (or 122ºF). Will any of the Class 1E electrical and I&C cabinets be located within the ESW pump house?

   The current COL FSAR has no non-class 1E ventilation system dedicated to normal power operations to prevent the ESW Pump House room temperatures from exceeding 100ºF during the extreme summertime high temperatures of central Texas. Please explain how you demonstrate the

Class 1E cabinet temperatures will not exceed 122ºF during the first hour of the SBO event when the AAC GTG has yet to be aligned to the Class 1E bus for HVAC cooling.

3) For the upper operating range average room temperature of 120ºF for the ESW Pump House rooms what is the temperature in the Class 1E cabinets? Given that internal cabinet temperatures typically run 5-10ºF above average room temperatures, the staff requests additional information about the applicant's analysis that justified an average room temperature of 120ºF as the design basis limit. Please explain how you demonstrate the cabinets remain below the design temperature.

ANSWER:

The only change made to the response (ML093520667) as a result of the supplemental information provided in response to RAI No. 4606 (CP #RAI 155) Question 02.03.01-6 (ML102780284) was the rating of the ESWP pump room unit exhaust fan was changed from 5 hp to 10 hp.

Impact on R-COLA

None.

Impact on DCD

None.

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.: 4606 (CP RAI #155)

SRP SECTION: 02.03.01 – Regional Climatology

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.01-6

NUREG-0800, Standard Review Plan (SRP), Chapter 2.3.1, Regional Climatology,' establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

10 CFR 52.79(a)(1)(iii) states, in part, that the COL application must contain the meteorological characteristics of the proposed site with appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated.

The staff considers temperatures based on a 100-year return period to provide sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated as required by the regulation. This is why SRP 2.3.1 states that 100-year return period ambient temperature and humidity statistics should be identified as site characteristics. Thus, the staff believes the higher of either the maximum recorded dry-bulb value or the maximum 100-year dry-bulb value should be listed as the 0 percent exceedance maximum dry-bulb site characteristic value. Similarly, the lower of either the minimum recorded dry-bulb value or the minimum 100-year dry-bulb value should be listed as the 0 percent exceedance minimum dry-bulb site characteristic value.

- The staff has found, through the use of the 2005 ASHRAE Handbook – Fundamentals for Dallas, TX, the 100-year return period maximum dry-bulb temperature to be higher than that provided in FSAR Table 2.0-1R and FSAR Table 2.3-202. Please either update the appropriate FSAR Sections with a revised 100-year return period maximum dry bulb temperature, or justify the use of the current temperature.
- The staff has found, through the use of the 2005 ASHRAE Handbook – Fundamentals for Dallas, TX, the 100-year return period minimum dry-bulb temperature to be lower than that provided in FSAR Table 2.0-1R and FSAR Table 2.3-202. Please either update the appropriate FSAR Sections with a revised 100-year return period minimum dry bulb temperature, or justify the use of the current temperature.

ANSWER:

Two FSAR pages that were determined to be affected by the response to this question submitted in ML102780284 are included here. Additionally, FSAR Table 2.0-1R has been further revised to show the 100-year return period temperatures in a new row so as to not confuse them with the 0 percent exceedance values.

Impact on R-COLA

See attached marked-up FSAR Revision 1 pages, 2.0-3, 9.4-1 and 9.4-2.

Impact on DCD

None.

Table 2.0-1R (Sheet 2 of 15)
Key Site Parameters

	Extreme wind speed (other than in tornado)	155 mph for 3-second gusts at 33 ft aboveground level based on 100-year return period, with importance factor of 1.15 for seismic category I/II structures	~~90~~96 mph for-3-second gust wind speed at 33-ft aboveground	RCOL2_02 .03.01-9
	Ambient design air temperature (1% exceedance maximum)	100°F dry bulb, 77°F coincident wet bulb, 81°F non-coincident wet bulb	99°F dry bulb, 75°F coincident wet bulb, 78°F non-coincident wet bulb	
CP COL 2.1(1) CP COL 2.2(1) CP COL 2.3(1) CP COL 2.3(2)	Ambient design air temperature (0% exceedance maximum)	115°F dry bulb, 80°F coincident wet bulb, 86°F non-coincident wet bulb, historical limit excluding peaks <2 hr	112°F dry bulb, 78°F coincident wet bulb, 83°F non-coincident wet bulb, historical limit excluding peaks <2 hr	RCOL2_02 .03.01-6 S01
	Ambient design air temperature (100-year return period maximum	N/A	115°F dry bulb 78°F coincident wet bulb	RCOL2_02 .03.01-6 S02
CP COL 2.3(3) CP COL 2.4(1)	Ambient design air temperature (1% exceedance minimum)	-10°F dry bulb	25°F dry bulb	
CP COL 2.5(1)	Ambient design air temperature (0% exceedance minimum)	-40°F dry bulb, historical limit excluding peaks <2 hr	-0.5°F dry bulb, historical limit excluding peaks <2 hr	RCOL2_02 .03.01-6 S01
	Ambient design air temperature (100-year return period minimum)	N/A	-5°F dry bulb	RCOL2_02 .03.01-6 S02
	Atmospheric dispersion factors (χ/Q values) for on-site locations:			
	Exclusion area boundary (EAB) 0-2 hrs	5.0×10^{-4} s/m^3	3.70×10^{-4} s/m^3	
	EAB annual average	1.6×10^{-5} s/m^3	5.5×10^{-6} s/m^3	
	Atmospheric dispersion factors (χ/Q values) for off-site locations:			

9.4 AIR CONDITIONING, HEATING, COOLING, AND VENTILATION SYSTEMS

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

9.4.1.2 System Description

CP COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.1.2 with the following.

The capacity of heating coils that are affected by site specific conditions is shown in Table 9.4-201. The site specific design basis for the heating coils is described in DCD Subsections 9.4.1.1 and 9.4.1.2 with the following site specific information. While the temperatures ranges for the Main Control Room is provided in DCD Table 9.4-1 and the design data for the air handling units is provided in DCD Table 9.4.1-1, the outside air temperature for CPNPP used to calculate the heater capacity is -5°F. The outside air is blended with the return air from the Main Control Room. RCOL2_09.04.01-1 RCOL2_02.03.01-6 S02

9.4.3.2.1 Auxiliary Building HVAC System

~~CP~~STD COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.3.2.1 with the following. CTS-01140

The capacity of cooling and heating coils that are affected by site specific conditions is shown in Table 9.4-201.

9.4.3.2.2 Non-Class 1E Electrical Room HVAC System

~~CP~~STD COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.3.2.2 with the following. CTS-01140

The capacity of cooling and heating coils that are affected by site specific conditions is shown in Table 9.4-201.

9.4.3.2.3 Main Steam/Feedwater Piping Area HVAC System

~~CP~~STD COL 9.4(4)

Replace the second sentence of the first paragraph in DCD Subsection 9.4.3.2.3 with the following. CTS-01140

The capacity of cooling and heating coils that are affected by site specific conditions is shown in Table 9.4-201.

9.4.3.2.4 Technical Support Center HVAC System

~~CP~~STD COL 9.4(4)

Replace the second sentence of the first paragraph in DCD Subsection 9.4.3.2.4 with the following. CTS-01140

The capacity of cooling and heating coils that are affected by site specific conditions is shown in Table 9.4-201.

9.4.5 Engineered Safety Feature Ventilation System

CP COL 9.4(6)

Delete the third paragraph and insert the following text to the end of the list of ESF ventilation systems in first paragraph of DCD Subsection 9.4.5.

- UHS ESW Pump House Ventilation System

CP COL 9.4(6)

Add the following new subsection after DCD Subsection 9.4.5.1.1.5.

9.4.5.1.1.6 UHS ESW Pump House Ventilation System

The UHS ESW pump house ventilation system provides and maintains the proper environmental conditions within the required temperature range ~~(~~of $40^{o}F$ – $120^{o}F$~~)~~ to support the operation of the instrumentation and control equipment and components in the individual UHS ESW pump houses during a design basis accident and LOOP. The ventilation system is designed based on the ~~with~~ outside ambient design temperature conditions ($-5^{o}F$ – $115^{o}F$) ~~of~~using ~~0% temperature exceedance values~~ 100-year return period temperature values. RCOL2_09.04.05-7 RCOL2_09.04.05-7 RCOL2_02.03.01-6 S02

The ESWP is installed at a location in the pump house where cooling air is adequately being circulated for cooling the ESWP motor. RCOL2_09.02.01-4