

PMComanchePeakPEm Resource

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Sent: Thursday, June 23, 2011 11:22 AM
To: Aitken, Diane; Akstulewicz, Frank; Barrie, Ashley; Bell, Russ; 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; Freitag, Al; Fujiwara, Yoshinori; Hamzehee, Hossein; Hill, Yukako; Hoshi, Masaya; Ishida, Mutsumi; Johnson, Michael; Kawanago, Shinji; Keithline, Kimberley; Kellenberger, Nick; Koenig, Allan; Kolhekar, Aditi; Kramer, John; Lucas, Mitch; Madden, Fred; Matthews, David; Matthews, Tim; McConaghy, Bill; Monarque, Stephen; Moore, Bill; ComanchePeakCOL Resource; Onozuka, Masanori; Paulson, Keith; Plisco, Loren; Reible, Robert; Rund, Jon; Saito, Kano; Simmons, Jeff; Singal, Balwant; Sprengel, Ryan; Suzuki, Shigemitsu; Takacs, Michael; Tapia, Joe; Tindell, Brian; Turner, Bruce; Volkening, David; Vrahoretis, Susan; Williamson, Alicia; Willingham, Michael; Woodlan, Don
Cc: Douglas, Nancy; Hill, Craig; Nold, David; Jackson, Christopher; Kallan, Paul
Subject: Response to RAI No. 5755 (CP RAI #220)
Attachments: TXNB-11043 RAI 220.pdf

Luminant has submitted to the NRC the attached response to CP RAI #220 addressing the seismic classification and safety function of specific HVAC instrumentation. If there are any questions regarding the response, please contact me or contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com).

Thanks,

John J. Conly

COLA Project Manager
(254) 897-5256

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June 23, 2011

U. S. Nuclear Regulatory Commission
Document Control Desk
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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. 5755
(SECTION 14.3.7)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 5755 (CP RAI #220) for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. This RAI addresses the seismic classification and safety function of specific instrumentation.

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 June 23, 2011.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

Attachment: Response to Request for Additional Information No. 5755 (CP RAI #220)

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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.: 5755 (CP RAI #220)

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

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

DATE OF RAI ISSUE: 5/20/2011

QUESTION NO.: 14.03.07-34

This is a follow-up RAI to RAI No. 3532 (CP RAI #83) Question No. 14.03.07-21 that relates to the essential service water (ESW) pump house ventilation system.

The staff notes that the applicant in its response, dated November 13, 2009 (ML093210468), failed to discuss the issue of instrumentation. However the applicant did commit to amend FSAR Table A.2-2 to include the temperature switches for exhaust fan operation (e.g. VRS-TS-2610C,D, E, F etc.). The staff notes that the temperature controllers of FSAR Figure 9.4-201 (e.g. VRS-TC-2610C,D, E, F etc.) would also have the same classification equipment class 3, seismic category I. The staff requests additional information about the absence of these temperature controllers from Table A.2-2. In addition, the applicant's response failed to address the issue of amending FSAR Table 3.2-201 with this new information.

The staff also notes that the temperature and flow instrumentation attached to the room heaters and exhaust fans would be classified as seismic category II (as a minimum threshold with respect to plant safety). The staff requests additional information about the seismic classification and about the basis for the classification of all instrumentation (i.e. including alarm temperature switches) displayed in Figure 9.4-201 and that the applicant update as necessary FSAR Tables 3.2-201 and A.2-2.

ANSWER:

As described in the response to RAI No. 5585 (CP RAI #213) Question 09.04.05-18 (ML11130A033) (TXNB-11032 dated May 6, 2011), the temperature controllers are part of the Protection and Safety Monitoring System, which is a basic software program described in DCD Chapter 7 incorporated by reference into the R-COLA. Therefore, Part 10 ITAAC Table A.2-2 is correct because Table A.2-2 only includes physical equipment and not software. Similarly, FSAR Table 3.2-201 does not include software programs.

All the instrumentation displayed in FSAR Revision 1 Figure 9.4-201 (FSAR Draft Revision 2 Figure 9.4-203) is designed in accordance with DCD Subsection 3.2.1. The non-safety related temperature and flow instrumentation attached to the unit heaters and exhaust fans is classified as seismic category II in accordance with the design bases described in DCD Subsection 3.2.1. Figure 9.4-201 has been revised to add a note that the non-safety related instrumentation attached to the unit heaters and exhaust fans is classified as seismic category II. Table A.2-2 addresses only safety-related equipment. Consistent with DCD Table 3.2-2, FSAR Table 3.2-201 does not list specific instruments. Therefore, no update is necessary for Table A.2-2 or Table 3.2-201 to include non-safety related instrumentation.

Impact on R-COLA

See attached marked-up FSAR Draft Revision 2 Figure 9.4-203.

Impact on S-COLA

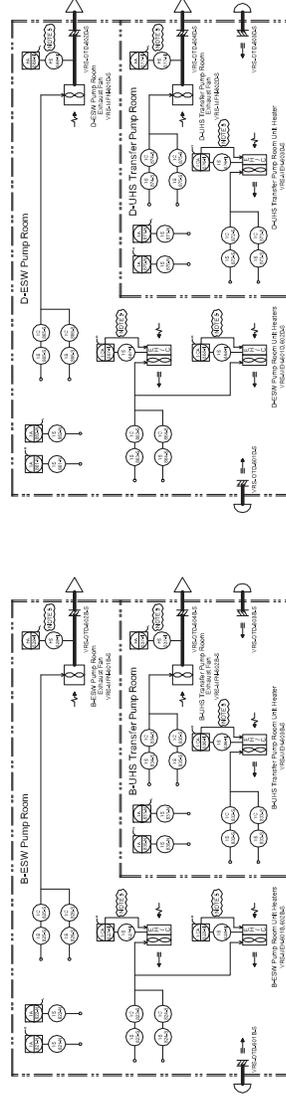
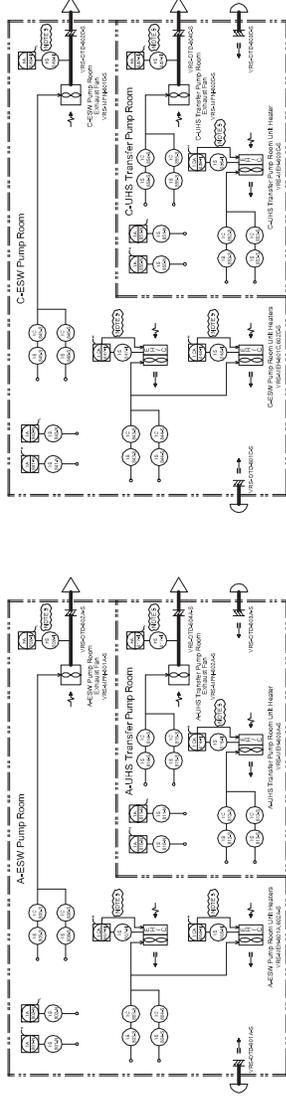
This response is considered standard.

Impact on DCD

None.

Comanche Peak Nuclear Power Plant, Units 3 & 4
 COL Application
 Part 2, FSAR

MAP-00-201
 MAP-09-311
 RCOL2_14.0
 3.07-34



LEGEND:
 PUMP CATEGORIES ARE DESIGNATED IN ACCORDANCE WITH SERVIC CATEGORY.
 THERE IS NO DUCTWORK IN THE VENTILATION SYSTEMS.
 THE MOUNTED REFRIGERATION IS SERVIC CATEGORY II.

- NOTE:**
1. FANS, DAMPERS AND HEATERS IN THIS SHEET ARE DESIGNATED IN ACCORDANCE WITH SERVIC CATEGORY I.
 2. BACKDRIFT DAMPERS ARE MOUNTED IN THE WALL OPENINGS.
 3. THERE IS NO DUCTWORK IN THE VENTILATION SYSTEMS.
 4. EXHAUST FANS ARE SERVIC CATEGORY II.
 5. THE MOUNTED REFRIGERATION IS SERVIC CATEGORY II.

RCOL2_09.0
 4.05-18

RCOL2_09.0
 4.05-3
 CTS-01140

Figure 9.4-203 UHS ESW Pump House Ventilation Systems Flow Diagram

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.: 5755 (CP RAI #220)

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

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

DATE OF RAI ISSUE: 5/20/2011

QUESTION NO.: 14.03.07-35

This is a follow-up RAI to RAI No. 3532 (CP RAI #83) Question No. 14.03.07-24 and relates to Item 4 of ITAAC Table A.2-1 for the ESW pump house ventilation system.

In its response dated November 13, 2009 (ML093210468), the applicant indicated that ITAAC Item 4 had been revised to be consistent with similar US-APWR DCD ITAAC concerning proper environmental conditions to support equipment and instrumentation operability during normal operation, abnormal and accident conditions.

The staff reviewed the revised ITAAC Item 4 of Table A.2-1 and concluded that while the ITAAC wording was improved, the "Acceptance Criteria" should be expanded to read "The as-built UHS ESW pump house ventilation system is capable of maintaining area design temperature limits within the respective room during all plant operating conditions, including normal plant operations, abnormal and accident conditions." As such, the staff requests that the RCOL applicant revise Item 4 Acceptance Criteria similar to the above.

ANSWER:

Luminant revised ITAAC Item 4 of Table A.2-1 in ITAAC UTR Revision 2 (ML11133A052) (TXNB-110031 dated May 9, 2011) to state:

A report exists and concludes that the as-built UHS ESW pump house ventilation system is capable of providing ventilation air to maintain area temperature within design limits in the UHS ESW pump houses during normal operations, abnormal and accident conditions of the plant with outside ambient design temperature condition (i.e. -5°F - 115°F).

Impact on R-COLA

None.

Impact on S-COLA

This response is site-specific.

Impact on DCD

None.

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.: 5755 (CP RAI #220)

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

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

DATE OF RAI ISSUE: 5/20/2011

QUESTION NO.: 14.03.07-36

This is a follow-up request for additional information to RAI No. 3532, Question No. 14.03.07-27. The applicant's response dated November 13, 2009 (ML093210468), to Question No. 14.03.07-27 included the words:

“Associated temperature controllers (TCs) located in series with the respective temperature switches as shown on FSAR Figure 9.4-201 are utilized for the initiation of the associated heater(s) or exhaust fan(s).

The safety function of the TSs and associated TCs is for automatic initiation of the fans on high temperature and for automatic initiation of the heaters on low temperature as indicated in Table A.2-2. The temperature indication (i.e. "display") and alarms as shown in FSAR Figure 9.4-201, and the ability to remotely operate the heaters and fans, are not credited for safety-related operation of UHS EWS Pump House Ventilation System

....

The safety related cooling (heating) function is achieved by operation of the safety related fans (unit heaters), and is automatically initiated through the TS and TC instrument loops. Manual operation is not credited to achieve this safety function.” (*emphasis added with underlining*)

The applicant states that the temperature switches and temperature controllers have a safety function in the automatic operation of safety related exhaust fans and room heaters. Contrary to this, the seventh column of the applicant's proposed revision of Table A.2-2 indicates that the temperature switches (i.e. absent their related temperature controllers) associated with automatic initiation of the system safety function have no “active safety related” function. Please correct the seventh column of the proposed revision of Table A.2-2 to accurately reflect the safety function of the TSs and TCs.

The applicant concluded its response with the statement “The alarms, displays and controls of the UHS EWS Pump House Ventilation System are not credited for the system to perform its safety-related function. The temperature switches in the last two columns (should read ‘rows’) of Table A.2-3 have been deleted since there is no “Yes” answer for safety related alarms, displays or controls in the MCR or RSC.” (*emphasis added with underlining*)

These statements are in conflict. The temperature switches and related controllers play a fundamental role in the automatic control of the safety related room heaters and exhaust fans. This was indicated as such by the applicant in Answer 2a (ML093520667) in their response to Question No. 09.04.05-10 of RAI No. 3232 (CP RAI#123). Please explain and correct this inconsistency.

The applicant's response also included the statement "The fans (unit heaters) operating status is displayed in the MCR. The fan status (RUN indication) indicates proper system operation". The existence of a run indication (i.e. in the MCR or at the RSC) on a fan or heater merely indicates that the control circuit of the heater or fan has a power supply and that most likely the heater or fan is performing its component function. The existence of run indication alone provides the operator an incomplete picture about proper operation of a safety related system. Other ventilation system components can fail to operate properly causing the system to fail in performing its required safety function. For example, if the room air inlet dampers fail to close during the winter during concurrent heater operation or fail to open during the summer during concurrent operation of the exhaust fan, the system could fail to perform its required safety function. The operator determines that the safety related system is fulfilling its safety related function by acknowledging the following:

- the absence of an exhaust fan low flow alarm
- the absence of high and low room temperature alarms
- the absence of non-redlined MCR controller temperature displays
- the proper run indication of a exhaust fan or heater

The operators will use these flow and temperature alarms and temperature control displays to determine that the system is fulfilling its intended safety function.

The staff noted in Question No. 14.03.07-27 that an excerpt from SRP Acceptance Criteria #9 of NUREG-0800, SRP 14.3.7 reads "Tier 1 should address and verify at least the minimum inventory of alarms, controls and indications as derived from the Emergency Procedure Guidelines, the requirements of RG 1.97, and probabilistic risk assessment insights." The staff requested additional information about how the COL applicant used these three sources of guidance to ensure that the listing of alarms, parameters and displays contained in Table A.2-3 fulfilled the intent of this excerpt. The applicant's response to this part of Question No. 14.03.07-27 was tied to the conflicted response described above with no discussion at all about Emergency Procedure Guidelines, the requirements of RG 1.97, and probabilistic risk assessment insights. The staff requests that the applicant revise their response to Question No. 14.03.07-27 to correct the inconsistencies and conflicts in the response, as noted above; describe how the applicant used Emergency Procedure Guidelines, the requirements of RG 1.97, and probabilistic risk assessment insights to ensure that the listing of alarms, parameters and displays contained in Table A.2-3 meets Acceptance Criteria #9 of NUREG-0800, SRP 14.3.7.

ANSWER:

Regarding the seventh column of Part 10 ITAAC Table A.2-2, the safety function of the temperature switches is to automatically start the exhaust fans on high temperature and to automatically energize the unit heaters on low temperature. The active safety function of the exhaust fans and the unit heaters is shown in Table A.2-2. The safety function of the temperature switches and controllers is tested as part of the active safety function of the exhaust fans and the unit heaters to 'Start.' As such, the active safety function of the temperature switches is not included separately in Table A.2-2. As described in the response to Question 14.03.07-34, the temperature controllers, which are actually part of the Protection and Safety Monitoring System software, are not included in Table A.2-2.

Regarding the apparent inconsistency between statements in the third paragraph of the question, Part 10 ITAAC Table A.2-3 includes equipment with main control room/remote shutdown console (MCR/RSC) alarm, display, and control functions. As indicated by the instrument symbols in FSAR Revision 1 Figure 9.4-201 (FSAR Draft Revision 2 Figure 9.4-203), the temperature switches that were deleted from the last two rows of the table do not provide alarm, display, or control functions in the MCR or at the RSC. Therefore, the temperature switches were appropriately deleted from Table A.2-3.

Regarding SRP 14.3.7 Acceptance Criteria #9, the UHS ESW pump house ventilation system fans (unit heaters) operating status is displayed in the MCR and at the RSC. This provides the operator with safety-related equipment status indication that is verified to be operable through pre-operational testing described in FSAR Subsection 14.2.12.1.114 and through functional testing during the plant operating lifetime. The Emergency Procedure Guidelines confirm acceptable performance of the ESW pumps and UHS transfer pumps through confirmation of system parameters rather than pump house ventilation status. The ESWS and UHS related post-accident monitoring variables for RG 1.97 requirements are UHS basin water level, ESW header pressure, and UHS basin water temperature, as indicated in FSAR Table 7.5-201. The monitoring variables do not include the ventilation-related parameters. In addition, the PRA does not credit UHS ESW pump house ventilation specifically in the model. Therefore, the indication of fan (unit heater) operating status is consistent with the intent of SRP 14.3.7 Acceptance Criterion #9. Additional non-safety related indication of room temperature via high temperature alarm and exhaust fan flow via low flowrate alarm would be used by the operator to confirm ventilation status, if available. The failure of a single train of UHS ESW pump house ventilation system fan (unit heater) to operate consistent with its status indication would not result in a loss of the ESW system or the UHS ESW pump house ventilation system safety function because of the four-train design configuration as described in FSAR Subsection 9.4.5.2.6.

Impact on R-COLA

None.

Impact on S-COLA

This response is considered standard.

Impact on DCD

None.