PMComanchePekNPEm Resource

From: John.Conly@luminant.com
Sent: Monday, June 28, 2010 10:48 AM
To: rjb@nei.org; david.beshear@txu.com; Biggins, James; rbird1@luminant.com; Dennis.Buschbaum@luminant.com; russell_bywater@mnes-us.com; JCaldwell@luminant.com; Ronald.Carver@luminant.com; cp34update@certrec.com; Ciocco, Jeff; Timothy.Clouser@luminant.com; Collins, Elmo; John.Conly@luminant.com; Carolyn.Cosentino@luminant.com; brock.degeyter@energyfutureholdings.com; nancy.douglas@txu.com; Eric.Evans@luminant.com; Rafael.Flores@luminant.com; sfrantz@morganlewis.com; Goldin, Laura; Hamzehee, Hossein; mutsumi_ishida@mnes-us.com; Johnson, Michael; shinji_kawanago@mnes-us.com; kak@nei.org; nicholas_kellenberger@mnes-us.com; Allan.Koenig@luminant.com; Kramer, John; mlucas3@luminant.com; Fred.Madden@luminant.com; Matthews, David; tmatthews@morganlewis.com; Monarque, Stephen; Ashley.Monts@luminant.com; Bill.Moore@luminant.com; ComanchePeakCOL Resource; masanori_onozuka@mnes-us.com; ck_paulson@mnes-us.com; Plisco, Loren; Robert.Reible@luminant.com; jrund@morganlewis.com; jeff.simmons@energyfutureholdings.com; Singal, Balwant; nan_sirirat@mnes-us.com; Takacs, Michael; joseph_tapia@mnes-us.com; Tindell, Brian; Bruce.Turner@luminant.com; Vrahoretis, Susan; Matthew.Weeks@luminant.com; Williamson, Alicia; Willingham, Michael; Donald.Woodlan@luminant.com; diane_yeager@mnes-us.com
Subject: Response to RAIs 156, 158, 163, and 164 Sumbitted
Attachments: TXNB-10048 RAI 156, 158, 163, 164.pdf

Luminant has submitted the attached response to the subject RAIs. RAI 156 and 158 involve meteorology questions while RAI 163 and 164 involve initial test program questions. Stephen Monarque and the Document Control Desk each received a CD containing the documents listed in Attachment 4 to the letter. E-mail recipients are not receiving those documents due to file size.

If there are any questions regarding the response, please contact me or contact Don Woodlan (254-897-6887, Donald.Woodlan@lumiant.com).

Thanks,

John Conly

Luminant
COLA Project Manager
(254) 897-5256

Hearing Identifier: ComanchePeak_COL_NonPublic
Email Number: 1759

Mail Envelope Properties (95E7006FD6637C4AAE706E18F8C97B34051178ED)

Subject: Response to RAIs 156, 158, 163, and 164 Sumbitted
Sent Date: 6/28/2010 10:48:09 AM
Received Date: 6/28/2010 10:48:57 AM
From: John.Conly@luminant.com

Created By: John.Conly@luminant.com

Recipients:
"rjb@nei.org" <rjb@nei.org>
Tracking Status: None
"david.beshear@txu.com" <david.beshear@txu.com>
Tracking Status: None
"Biggins, James" <James.Biggins@nrc.gov>
Tracking Status: None
"rbird1@luminant.com" <rbird1@luminant.com>
Tracking Status: None
"Dennis.Buschbaum@luminant.com" <Dennis.Buschbaum@luminant.com>
Tracking Status: None
"russell_bywater@mnes-us.com" <russell_bywater@mnes-us.com>
Tracking Status: None
"JCaldwell@luminant.com" <JCaldwell@luminant.com>
Tracking Status: None
"Ronald.Carver@luminant.com" <Ronald.Carver@luminant.com>
Tracking Status: None
"cp34update@certrec.com" <cp34update@certrec.com>
Tracking Status: None
"Ciocco, Jeff" <Jeff.Ciocco@nrc.gov>
Tracking Status: None
"Timothy.Clouser@luminant.com" <Timothy.Clouser@luminant.com>
Tracking Status: None
"Collins, Elmo" <Elmo.Collins@nrc.gov>
Tracking Status: None
"John.Conly@luminant.com" <John.Conly@luminant.com>
Tracking Status: None
"Carolyn.Cosentino@luminant.com" <Carolyn.Cosentino@luminant.com>
Tracking Status: None
"brock.degeyter@energyfutureholdings.com" <brock.degeyter@energyfutureholdings.com>
Tracking Status: None
"nancy.douglas@txu.com" <nancy.douglas@txu.com>
Tracking Status: None
"Eric.Evans@luminant.com" <Eric.Evans@luminant.com>
Tracking Status: None
"Rafael.Flores@luminant.com" <Rafael.Flores@luminant.com>
Tracking Status: None
"sfrantz@morganlewis.com" <sfrantz@morganlewis.com>
Tracking Status: None
"Goldin, Laura" <Laura.Goldin@nrc.gov>
Tracking Status: None
"Hamzehee, Hossein" <Hossein.Hamzehee@nrc.gov>

Tracking Status: None
"mutsumi_ishida@mnes-us.com" <mutsumi_ishida@mnes-us.com>
Tracking Status: None
"Johnson, Michael" <Michael.Johnson@nrc.gov>
Tracking Status: None
"shinji_kawanago@mnes-us.com" <shinji_kawanago@mnes-us.com>
Tracking Status: None
"kak@nei.org" <kak@nei.org>
Tracking Status: None
"nicholas_kellenberger@mnes-us.com" <nicholas_kellenberger@mnes-us.com>
Tracking Status: None
"Allan.Koenig@luminant.com" <Allan.Koenig@luminant.com>
Tracking Status: None
"Kramer, John" <John.Kramer@nrc.gov>
Tracking Status: None
"mlucas3@luminant.com" <mlucas3@luminant.com>
Tracking Status: None
"Fred.Madden@luminant.com" <Fred.Madden@luminant.com>
Tracking Status: None
"Matthews, David" <David.Matthews@nrc.gov>
Tracking Status: None
"tmatthews@morganlewis.com" <tmatthews@morganlewis.com>
Tracking Status: None
"Monarque, Stephen" <Stephen.Monarque@nrc.gov>
Tracking Status: None
"Ashley.Monts@luminant.com" <Ashley.Monts@luminant.com>
Tracking Status: None
"Bill.Moore@luminant.com" <Bill.Moore@luminant.com>
Tracking Status: None
"ComanchePeakCOL Resource" <ComanchePeakCOL.Resource@nrc.gov>
Tracking Status: None
"masanori_onozuka@mnes-us.com" <masanori_onozuka@mnes-us.com>
Tracking Status: None
"ck_paulson@mnes-us.com" <ck_paulson@mnes-us.com>
Tracking Status: None
"Plisco, Loren" <Loren.Plisco@nrc.gov>
Tracking Status: None
"Robert.Reible@luminant.com" <Robert.Reible@luminant.com>
Tracking Status: None
"jrund@morganlewis.com" <jrund@morganlewis.com>
Tracking Status: None
"jeff.simmons@energyfutureholdings.com" <jeff.simmons@energyfutureholdings.com>
Tracking Status: None
"Singal, Balwant" <Balwant.Singal@nrc.gov>
Tracking Status: None
"nan_sirirat@mnes-us.com" <nan_sirirat@mnes-us.com>
Tracking Status: None
"Takacs, Michael" <Michael.Takacs@nrc.gov>
Tracking Status: None
"joseph_tapia@mnes-us.com" <joseph_tapia@mnes-us.com>
Tracking Status: None
"Tindell, Brian" <Brian.Tindell@nrc.gov>
Tracking Status: None
"Bruce.Turner@luminant.com" <Bruce.Turner@luminant.com>
Tracking Status: None
"Vrahoretis, Susan" <Susan.Vrahoretis@nrc.gov>

Tracking Status: None
"Matthew.Weeks@luminant.com" <Matthew.Weeks@luminant.com>
Tracking Status: None
"Williamson, Alicia" <Alicia.Williamson@nrc.gov>
Tracking Status: None
"Willingham, Michael" <Michael.Willingham@nrc.gov>
Tracking Status: None
"Donald.Woodlan@luminant.com" <Donald.Woodlan@luminant.com>
Tracking Status: None
"diane_yeager@mnes-us.com" <diane_yeager@mnes-us.com>
Tracking Status: None

Post Office: MDCTXUEXCL01N4.corptxu.txu.com

Files	**Size**	**Date & Time**
MESSAGE	1198	6/28/2010 10:48:57 AM
TXNB-10048 RAI 156, 158, 163, 164.pdf	1007594	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Luminant

Rafael Flores
Senior Vice President &
Chief Nuclear Officer
rafael.flores@luminant.com

Luminant Power
P O Box 1002
6322 North FM 56
Glen Rose, TX 76043

T 254.897.5590
F 254.897.6652
C 817.559.0403

CP-201000866
Log # TXNB-10048

Ref. # 10 CFR 52

June 25, 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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION NO. 4607, 4613, 4681, AND 4712

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 4607, 4613, 4681, and 4712 for the Combined License Application (COLA) for Comanche Peak Nuclear Power Plant Units 3 and 4. RAI No. 4607 and 4613 involve meteorology questions while RAI No. 4681 and 4712 involve initial test program questions. The attachments and marked-up COLA pages referenced in the response are included on the enclosed CD sorted by RAI number.

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

The only commitment in this letter is captured on page 2.

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

Executed on June 25, 2010.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachments:
1. Response to Request for Additional Information No. 4607 (CP RAI #156)
2. Response to Request for Additional Information No. 4613 (CP RAI #158)
3. Response to Request for Additional Information No. 4681 (CP RAI #164)
4. Response to Request for Additional Information No. 4712 (CP RAI #163)
5. Electronic Files Included on the Enclosed CD

Regulatory Commitments in this Letter

This communication contains the following new or revised commitment which will be completed or incorporated into the CPNPP licensing basis as noted. The Commitment Number is used by Luminant for internal tracking.

Number	Commitment	Due Date/Event
7581	(RAI CP #164 Question 14.02-18): Similar changes to Table 1.9-201 will be made for other RGs not associated with Section 14.2 in a future FSAR update tracking report.	Future FSAR UTR

cc: Stephen Monarque w/attachments and CD

Electronic distribution w/attachments:

Rafael.Flores@luminant.com
mlucas3@luminant.com
jeff.simmons@energyfutureholdings.com
Bill.Moore@luminant.com
Brock.Degeyter@energyfutureholdings.com
rbird1@luminant.com
Matthew.Weeks@luminant.com
Allan.Koenig@luminant.com
Timothy.Clouser@luminant.com
Ronald.Carver@luminant.com
David.Volkening@luminant.com
Bruce.Turner@luminant.com
Eric.Evans@luminant.com
Robert.Reible@luminant.com
donald.woodlan@luminant.com
John.Conly@luminant.com
JCaldwell@luminant.com
David.Beshear@txu.com
Ashley.Monts@luminant.com
Fred.Madden@luminant.com
Dennis.Buschbaum@luminant.com
Carolyn.Cosentino@luminant.com
NuBuild Licensing files

Luminant Records Management (.pdf files only)

shinji_kawanago@mnes-us.com
masanori_onozuka@mnes-us.com
ck_paulson@mnes-us.com
joseph_tapia@mnes-us.com
russell_bywater@mnes-us.com
diane_yeager@mnes-us.com
mutsumi_ishida@mnes-us.com
nan_sirirat@mnes-us.com
nicolas_kellenberger@mnes-us.com
rjb@nei.org
kak@nei.org
michael.takacs@nrc.gov
cp34update@certrec.com
michael.johnson@nrc.gov
David.Matthews@nrc.gov
Balwant.Singal@nrc.gov
Hossein.Hamzehee@nrc.gov
Stephen.Monarque@nrc.gov
jeff.ciocco@nrc.gov
michael.willingham@nrc.gov
john.kramer@nrc.gov
Brian.Tindell@nrc.gov
Alicia.Williamson@nrc.gov
Elmo.Collins@nrc.gov
Loren.Plisco@nrc.com
Laura.Goldin@nrc.gov
James.Biggins@nrc.gov
Susan.Vrahoretis@nrc.gov
ComanchePeakCOL.Resource@nrc.gov
sfrantz@morganlewis.com
jrund@morganlewis.com
tmatthews@morganlewis.com

Attachment 1

Response to Request for Additional Information No. 4607 (CP RAI #156)

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.: 4607 (CP RAI #156)

SRP SECTION: 02.03.02 - Local Meteorology

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.02-4

As follow-up to RAI 2.3.2-2, the staff conducted a review of the SACTI files and cooling tower calculation from ENERCON (Calculation No. TXUT-001-ER-5.3-CALC-005, Rev. 2, 3/19/2009; Plume Characteristics of Proposed Cooling Towers at Comanche Peak) provided by Luminant. The staff has found what it believes to be several inconsistencies with the calculations provided. Please note and respond to the following:

In Table 3 of the calculation, the y-values appear to have been calculated using SIN(30 degrees), in the equations at the bottom of page 16 of 34, instead of using COS(30 degrees).

In Card 26 of PREP.USR (as described on page 17 of 34 of the calculation), three representative wind directions are to be selected for the tower based on SACTI recommendations. These wind directions are suggested to be a wind at 45 degrees to the tower, a direction perpendicular to the tower, and the direction along the tower's long axis. The tower is oriented approximately 30 degrees west of north. The wind directions selected by Enercon, were 0, 60, and 150 degrees, respectively. The second and third angles are consistent with the SACTI recommendation, but the first wind direction is only oriented 30 degrees and not 45 degrees off of the tower. A wind direction of 15 degrees east of north would be oriented 45 degrees off of the tower. Please clarify why a wind direction with a 30 degree orientation off the tower was used, instead of 45 degrees.

Card 27 in PREP.USR. From Card 26 the representative wind direction designators are as follows: 1 for a 15 degree wind [diagonal], 2 for a 60 degree wind [perpendicular], and 3 for a 150 degree wind [along the towers long axis]. It appears then in Card 27, the designations should be (approximately) as follows for the 16 wind sectors (starting at north and going clockwise): 1122113311221133. This designation scheme assumes the following orientation of the wind to the tower for the 16 wind directions:

N wind - Diagonal to tower
NNE wind - Diagonal to tower
NE wind - Perpendicular to tower
ENE wind - Perpendicular to tower
E wind - Diagonal to tower
ESE wind - Diagonal to tower
SE wind - Along tower axis
SSE wind - Along tower axis
S wind - Diagonal to tower
SSW wind - Diagonal to tower
SW wind - Perpendicular to tower
WSW wind - Perpendicular to tower
W wind - Diagonal to tower
WNW wind - Diagonal to tower
NW wind - Along tower axis
NNW wind - Along tower axis

Clarify why a different set of wind direction designators were used in Calculation No. TXUT-001-ER-5.3-CALC-005, Rev. 2, 3/19/2009; Plume Characteristics of Proposed Cooling Towers at Comanche Peak.

ANSWER:

Luminant concurs that an incorrect factor was used in the preparation of TXUT-001-ER-5.3-CALC-005, Rev. 2. The revised calculation is attached to this response.

The calculation has been revised to reflect all of the above corrections. The cooling tower coordinates were changed, the additional wind direction was selected, and the recommended wind sectors were applied. The impact was an increase in the relative frequency of shorter plumes (1/3 to 2/3 mile in length), which in turn decreased the average plume length from 2.02 miles to 1.99 miles.

The revision of the calculation also used revised estimates of limiting Lake Granbury concentrations of sodium, chloride, and total dissolved solids (TDS). The concentrations increased, therefore the depositions increased. Furthermore, since the original 2008 plume study, water use calculations such as the makeup and blow down estimates have assumed a more conservative value of 0.01% cooling tower drift. The cooling tower plume analysis assumes a 0.0005% drift reflecting the projected use of state-of-the-art drift eliminators.

The use of higher chemistry values cause the average deposition rate over all sectors to increase, but the shifting wind inputs cause the increase to be different values in different sectors. However, the deposition rates are still below 1-2 kg/ha-month (100-200 kg/km^{2}month) beyond a short distance from the cooling towers.

Attachment

TXUT-001-ER-5.3-CALC-005, Rev. 3, Plume Characteristics of Proposed Cooling Towers at Comanche Peak (on CD)

Impact on R-COLA

See attached marked-up FSAR Revision 1 pages 2.3-35, 2.3-36, 2.3-215, 2.3-216, 2.3-217, 2.3-218, 2.3-219, 2.3-220, 2.3-221, 2.3-222, 2.3-223, 2.3-224, 2.3-225, 2.3-226, 2.3-227, 2.3-231, 2.3-232,

2.3-233, 2.3-237, 2.3-238, 2.3-239, 2.3-243, 2.3-244, 2.3-245, 2.3-249, 2.3-250, 2.3-251, 2.3-252, and Figures 2.3-372, 2.3-373, 2.3-374, 2.3-375, 2.3-376, 2.3-377, 2.3-378, and 2.3-379 (on CD).

See attached marked-up ER Revision 1 pages 5.3-13, 5.3-15, 5.3-22, 5.3-23, 5.3-24, 5.3-25, 5.3-26, 5.3-27, 5.3-28, and 5.3-29 (on CD).

Impact on S-COLA

None.

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.: 4607 (CP RAI #156)

SRP SECTION: 02.03.04 - Local Meteorology

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.02-5

NUREG-0800, Standard Review Plan (SRP), Chapter 2.3.2, 'Local Meteorology,' establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

As a follow-up to RAI 2.3.2-2, please provide References 2.9 and 2.10 from the cooling tower calculation (Calculation No. TXUT-001-ER-5.3-CALC-005, Rev. 2, dated March 19, 2009; 'Plume Characteristics of Proposed Cooling Towers at Comanche Peak').

ANSWER:

Reference 2.9 and Reference 2.10 are attached to this response. TXUT-001-ER-5.3-CALC-005 has been revised (Rev. 3) to base its component concentrations on a new reference, ER RAI GEN-03 attachment "Table 1 - Simulation Results of Makeup Water Data and BDTF" submitted on March 19, 2010 (ML100820402).

Attachments

2.9 Cooling Tower Drift Mass Distribution, Excel Drift Eliminators, Marley Cooling Technologies

2.10 Sample Results from Lake Granbury Surface Water Monitoring Events (2007-2008) (on CD)

Impact on R-COLA

None.

Impact on S-COLA

None.

Impact on DCD

None.

COOLING TOWER DRIFT MASS DISTRIBUTION
Excel Drift Eliminators

The following table represents the predicted mass distribution of drift particle size for cooling tower drift dispersed from Marley Excel Drift Eliminators properly installed in a counterflow cooling tower.

Mass in Particles (%)		Droplet Size (Microns)
0.2	Larger Than	525
1.0	Larger Than	375
5.0	Larger Than	230
10.0	Larger Than	170
20.0	Larger Than	115
40.0	Larger Than	65
60.0	Larger Than	35
80.0	Larger Than	15
88.0	Larger Than	10

How to read table: Example – 0.2% of the drift will have particle sizes larger than 525 microns.

Marley Cooling Technologies

Attachment 2

Response to Request for Additional Information No. 4613 (CP RAI #158)

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.: 4613 (CP RAI #158)

SRP SECTION: 02.03.04 - Short Term Atmospheric Dispersion Estimates for Accident Releases

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.04-8

NUREG-0800, Standard Review Plan (SRP), Chapter 2.3.4, 'Shortterm Dispersion Estimates for Accident Releases,' establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

> Luminant provided ARCON96 model results and supporting calculations in response to RAI 2.3.4-4. For the releases from the Main Steam Line to the Control Room and the Technical Support Center (TSC) intakes, the wind direction for maximum χ/Qs would indicate that the top of the containment structure may not be the influencing structure. Typically, a structure is considered influencing if its region of influence (see Regulatory Guide 1.194, Figure 1) interacts with the wind direction aligning the source and receptor. Using Figure 2.3-2 of the USAPWR DCD, Rev. 2, and using a wind direction aligning the Main Steam Line source point with the Control Room and TSC intakes, this figure indicates that the top of the containment's region of influence (0.5L from the side of the containment) may not interact with this wind direction.
>
> It's possible that the modeling conducted by Luminant using the 1,200 square meter building dimension for all source-receptor alignments is also suitable for the Main Steam Line releases, but this should be justified for the structures that actually influence this source-receptor alignment or updated. All other calculations provided by Luminant were confirmed by the NRC staff through independent calculations and model runs.

ANSWER:

The postulated Main Steam Line (MSL) break locations are greater than 0.5L from the containment structure and are therefore outside of the Zone of Influence of the containment structure. Table A-2 of Regulatory Guide 1.194 states that the building area entered in ARCON96 is the vertical cross-sectional area perpendicular to the wind direction for the building that has the largest impact on the building wake within the wind direction window. The wind direction window is defined as a 90-degree sector centered on the line of sight between the source and receptor. The Reactor Building is the only building within the 90-degree wind direction window. The cross-sectional area of the Reactor Building within the wind

direction window was determined for a release from the East MSL to the East Control Room HVAC intake. The East Control Room intake and MSL break location were analyzed because it resulted in a smaller cross-sectional area than using the West MSL break location to the West Control Room HVAC intake, which maximizes the difference in the building area. Also, a release from the East MSL to the East Control Room HVAC intake resulted in higher χ/Q values than any other MSL release to Control Room HVAC intake combination.

The cross-sectional area of the Reactor Building within the wind direction window was calculated based on the width of the Reactor Building within the wind direction window perpendicular to the line of sight between the MSL break location and the Control Room HVAC Intake. This width stretched from the southwest corner of the Reactor Building to the wind direction window, resulting in an approximate width of 105 ft (32 m). The height of the Reactor Building used to determine the cross-sectional area was based on the elevation difference between the East MSL break location, 12.8 m, and the tallest point of the Reactor Building in the wind direction window, 40.8 m (134'-0"). The resulting cross-sectional area of the Reactor Building is 467 m^2, which is rounded up to 450 m^2 for conservatism.

A study calculation was completed to evaluate the impact of changing the cross-sectional building area from 1200 m^2 to 450 m^2 on the χ/Q values for a release from the East MSL break to the East Control Room HVAC intake. The smaller cross-sectional building area resulted in the χ/Q values increasing for some time periods. The largest increase was 0.6 percent for the 0-8 hour and 4-30 day time periods. There is at least 15 percent margin between the site-specific χ/Q values and the DCD χ/Q values determined for a MSL break. Therefore, the change in the χ/Q values is negligible.

Impact on R-COLA

None.

Impact on S-COLA

None.

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.: 4613 (CP RAI #158)

SRP SECTION: 02.03.04 - Short Term Atmospheric Dispersion Estimates for Accident Releases

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.04-9

NUREG-0800, Standard Review Plan (SRP), Chapter 2.3.4, 'Shortterm Dispersion Estimates for Accident Releases,' establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

> Luminant provided ARCON96 model results and supporting calculations for TSC habitability in response to RAI 2.3.4-4. Please update FSAR Table 2.0-1R to include the TSC χ/Qs compared to the DCD Rev. 2 bounding values.

ANSWER:

FSAR Table 2.0-1R has been updated to include the DCD TSC χ/Q values and the corresponding CPNPP Units 3 and 4 TSC χ/Q site characteristics.

Impact on R-COLA

See attached marked-up FSAR Revision 1 pages 2.0-13, 2.0-14, and 2.0-15 (on CD).

Impact on S-COLA

None.

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.: 4613 (CP RAI #158)

SRP SECTION: 02.03.04 - Short Term Atmospheric Dispersion Estimates for Accident Releases

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.04-10

With regard to the ARCON96 supporting calculations, for control room habitability, provided by Luminant, please correct the following typographical errors for the next revision of the COL Part 2 FSAR:

- In the updated Table 2.0-1R (Sheet 3 of 12) provided with the response to RAI 2.3.4-4, for the main control room χ/Q values from the plant vent to the East HVAC Intake, the updated χ/Q for the 4-30 day averaging period should be 9.0E-05 instead of 9.0E-04. In this same table (Sheet 6 of 12), the USAPWR DCD χ/Q values for a release from the Fuel Handling Area should be updated for DCD, Rev. 2.

- In updated COL Part 2 FSAR Table 2.3.338 (Sheet 3 of 7) included with the response to RAI 2.3.4-4, the release points for the Main Steam Relief Valves need to include the word "Relief" in the table (the table currently labels these as Main Steam Valve).

Control room related updates to the tables provided in the response to RAI 2.3.4-4 should also be reflected in the next version of the FSAR.

ANSWER:

The χ/Q for the 4-30 day averaging period has been changed to 9.0E-05 sec/m^3. The Fuel Handling Area χ/Qs provided in DCD Table 2.0-1R (Sheet 6 of 12) were updated in FSAR Revision 1 UTR Revision 2 submitted under TXNB-10040 dated June 4, 2010 (ML101610135).

The word "Relief" has been added to FSAR Table 2.3-338 (Sheet 3 of 7) so that it reads "Main Steam Relief Valves" in the table instead of "Main Steam Valves".

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 2.3-257 (on CD)

Impact on S-COLA

None.

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.: 4613 (CP RAI #158)

SRP SECTION: 02.03.04 - Short Term Atmospheric Dispersion Estimates for Accident Releases

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.04-11

NUREG-0800, Standard Review Plan (SRP), Chapter 2.3.4, 'Shortterm Dispersion Estimates for Accident Releases,' establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

With regard to the ARCON96 supporting calculations for TSC habitability, provided by Luminant, address the following:

- In Table 2-1 of the TSC calculation document (TXUT-001-FSAR-13.3-CALC-026 R1, "CPNPP Technical support Center Accident χ/Q Calculation"), note that the χ/Q value for the Main Steam Line (West) of 2.4E-04 s/m^3, for the 4 – 30 day averaging period, is above the USAPWR DCD, Rev. 2 value of 2.3E-4 s/m^3.

- In this same table, the 2-8 hours χ/Q value for the Main Steam Relief Valve (West) should be 9.3E-4 instead of 9.3E-3. Also in Table 7-3 of this calculation document, the 0-2 hour χ/Q value under the Main Steam Line heading should be 1.1E-4 instead of 1.1E-5.

Luminant is requested to address these items in the next revision of the COL Part 2 FSAR.

ANSWER:

Calculation TXUT-001-FSAR-13.3-CALC-026, Revision 1 determines the site specific TSC atmospheric dispersion values only. Comparisons to the DCD values are not provided in this calculation, but are provided in FSAR Table 2.0-1R. Because the site characteristic exceeds the DCD site parameter for the 4–30 day averaging period, the acceptability of the site characteristic is to be determined in accordance with the guidance provided in FSAR Chapter 15. DCD Subsection 15.0.3.3 states:

> In the COLA, if the site-specific χ/Q values exceed DCD χ/Q values, then the COL Applicant is to demonstrate how the dose reference values in 10 CFR 50.34 and 10 CFR 52.79 and the control room dose limits in 10 CFR 50, Appendix A, General Design Criterion 19 are met for affected events using site-specific χ/Q values. Additionally, the Technical Support Center (TSC) dose should be evaluated against the habitability requirements in Paragraph IV.E.8 to 10 CFR Part 50, Appendix E, and 10 CFR 50.47 (b)(8) and (b)(11).

The onsite and offsite dose consequences of a steam line break are provided in DCD Table 15.1.5-3, which shows that the MCR doses are within the 0.05 Sv (5 rem) total effective dose equivalent (TEDE) limit of 10 CFR 50 Appendix A General Design Criterion (GDC) 19. The predicted TSC doses are not presented in DCD Table 15.1.5-3; instead the statement is made that the TSC doses are less than the MCR LOCA doses. The higher site characteristic steam line break TSC χ/Q value for the 4-30 day averaging period increases the TSC doses slightly for this time period. However, there is no activity released during the 4 - 30 day (96 – 720 hr) time interval for a steam system piping failure (DCD Tables 15A-26 and15A- 27) and the radionuclide releases are much higher for earlier time periods when the site characteristic TSC χ/Q values are lower than the corresponding DCD TSC χ/Q site parameters. Therefore, the TSC total accident dose χ/Q value calculated for the site characteristic steam line break is lower than the DCD TSC dose and meets the dose limits of GDC 19 and the habitability requirements in 10 CFR 50 Appendix E (IV.E.8), and 10 CFR 50.47(b)(8) and (b)(11).

FSAR Subsection 15.0.3.3 has been revised to address the higher site characteristic steam line break TSC χ/Q value.

Table 2-1 of calculation TXUT-001-FSAR-13.3-CALC-026 Revision 1 has been revised to correct the 2-8 hour χ/Q value for the Main Steam Relief Valve (West) from 9.3E-3 to 9.3E-4. The 0-2 hour χ/Q value in Table 7-3 under the Main Steam Line heading has been revised from 1.1E-5 to 1.1E-4. The revised calculation is attached to this response.

Attachment

TXUT-001-FSAR-13.3-CALC-026, Revision 2 (on CD)

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 15.0-1 (on CD).

Impact on S-COLA

None.

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.: 4613 (CP RAI #158)

SRP SECTION: 02.03.04 - Short Term Atmospheric Dispersion Estimates for Accident Releases

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

DATE OF RAI ISSUE: 4/27/2010

QUESTION NO.: 02.03.04-12

NUREG-0800, Standard Review Plan (SRP), Chapter 2.3.4, 'Shortterm Dispersion Estimates for Accident Releases,' establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

FSAR Table 2.0-1R does not give the site-specific onsite control room χ/Q values for each release point for the main control room (MCR) inleak, but instead states that other intake χ/Q values are bounding. Footnote (j) to the table explains that the MCR inleak χ/Qs were conservatively determined using the closer of either the Electrical Room HVAC intake or the Control Room HVAC intake. Provide the Comanche Peak Nuclear Power Plant, Units 3 and 4 χ/Q values for the MCR inleak and describe in more detail in FSAR Section 2.3.4 the determination of the χ/Q values as explained in Footnote (j) to FSAR Table 2.0-1R.

An assumption was made in the ARCON96 analysis that because the source-inleak distances are greater than the source-intake distances, the source-intake cases are bounding. However, there are meteorological conditions that can also influence worst case χ/Q values.

If the 90 degree wind sector for the source-inleak alignment is different than the source-intake alignment, could differing meteorological conditions influence χ/Q results? If the wind directions that align the source-inleak cases and the wind directions that align the source-intake cases are different, what are the differences in wind speed and stability class? If for example, wind speeds are generally lower and stability classes are more stable for the source-inleak wind alignment, χ/Q values could possibly be higher even though the distance for the source-inleak alignment is greater than for the source-intake alignment. Were these conditions evaluated?

Include in FSAR Section 2.3.4 a discussion of these issues and a comparison between the onsite control room χ/Q values and the US-APWR inleakage χ/Q values.

ANSWER:

For conservatism, all of the Control Room χ/Q values provided in FSAR Table 2.0-1R were determined using the shorter distance from either the source to the MCR HVAC intake or to the Electrical Room HVAC intake. The Electrical Room HVAC intake is in very close proximity to the MCR HVAC intake, so the direction from the source to each of the receptors does not change significantly enough to greatly impact the χ/Q values.

There are three types of receptors for inleakage identified in DCD Figure 15A-1. Those receptors are the Electrical Room HVAC intakes, Reactor Building door, and Auxiliary Building and TSC HVAC intakes. The Electrical Room HVAC intakes were evaluated as stated in the paragraph above. The Reactor Building door is an interior door. This receptor was not analyzed because it is not exposed to the environment. While the Auxiliary Building and TSC HVAC intakes could produce slightly higher χ/Q values as calculated by ARCON96 for certain sources, those χ/Q values would not be reasonable because they do not account for dispersion throughout the buildings while the plume travels to the MCR. The torturous path from the Auxiliary Building and TSC HVAC intakes to the MCR would more than offset any differences between the χ/Q values calculated for the Auxiliary Building HVAC intake and those calculated for the MCR HVAC intake. Therefore, the χ/Q values for the MCR HVAC intakes are conservative for use when considering MCR inleakage because the MCR HVAC leads directly to the MCR.

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 2.3-46 (on CD).

Impact on S-COLA

None.

Impact on DCD

None.

Attachment 3

Response to Request for Additional Information No. 4681 (CP RAI #164)

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.: 4681 (CP RAI #164)

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: 5/19/2010

QUESTION NO.: 14.02-18

Regulatory Basis: NUREG-0800, Standard Review Plan (SRP), Section 1.0

Table 1.9-201, "Comanche Peak Nuclear Power Plant Units 3 & 4 Conformance with Division 1 Regulatory Guides," provides the list of Regulatory Guides (RGs) that are applicable to the Comanche Peak Nuclear Power Plant (CPNPP), Units 3 & 4 Final Safety Analysis Report (FSAR). This table describes the exceptions taken by CPNPP to various RGs applicable to subsection 14.2. However, there is no corresponding chapter/subsection within the FSAR where the exception to the RG is described. In addition, some of the subsections identified in the table do not exist.

Therefore, the applicant is requested to:

1. Revise and update Table 1.9-201 of the FSAR to include the correct subsections of 14.2.

2. Clearly state and justify the exceptions taken to the RGs applicable to subsection 14.2.

ANSWER:

1. The FSAR Table 1.9-201 cross-references include DCD subsections that are incorporated by reference (IBR) into the FSAR (e.g., Subsections 14.2.6 and 14.2.7). Thus, each of the Section 14.2 references in Table 1.9-201 does exist. Although Table 1.9-201 addresses Division 1 RG conformance with respect to site-specific design and operational aspects, references to DCD information that has been IBR are provided where the information is relevant to the RG position for CPNPP Units 3 and 4, as is the case with Subsections 14.2.6 and 14.2.7. FSAR Subsection 1.9.1 has been revised to clarify that Table 1.9-201 includes RGs that address operational aspects as well as site-specific design.

DCD Subsection 14.2.6 includes a description of the startup report consistent with the guidance of RG 1.16. The DCD position for RG 1.16 in Table 1.9.1-1 identifies an exception in that programmatic/operational aspects of the RG are not applicable to the US-APWR design certification. Incorporation of DCD Subsection 14.2.6 into the FSAR addresses RG 1.16 guidance with respect to the startup report specifically for CPNPP Units 3 and 4. Therefore, Subsection 14.2.6 is cross-referenced to RG 1.16 in FSAR Table 1.9-201.

DCD Subsection 14.2.7 addresses RGs associated with the initial test program (ITP). It refers to DCD Table 1.9.1-1, which describes conformance of the US-APWR DCD to Division 1 RGs and Table 14.2-2, which identifies the RGs associated with the ITP. All of the RGs listed in Table 1.9-201 in which Section 14.2 is referenced are associated with the ITP and are listed in DCD Table 14.2-2. Each of the FSAR Table 1.9-201 entries for these RGs refers to Subsection 14.2.7 because the RGs are associated with the ITP.

As discussed the above, FSAR Table 1.9-201 includes a reference to IBR portions of Section 14.2 due to the scope of the RGs. However references to the IBR sections may be confusing. Therefore Table 1.9-201 has been revised to remove the reference to the IBR portion of Section 14.2 in "Corresponding Chapter/Section" column.

Similar changes to Table 1.9-201 will be made for other RGs not associated with Section 14.2 in a future FSAR update tracking report.

2. An evaluation of each exception taken to the RGs in which Section 14.2 is referenced follows:

<u>RG 1.8, Qualification and Training of Personnel for Nuclear Power Plants (Revision 3, May 2000)</u>

FSAR Subsection 14.2.2 was revised as described in response to RAI No. 2954 (CP RAI #75) Question 14.02-4 dated November 11, 2009 (ML093220204) to add the following text:

> Test personnel comply with the education, training, qualification, and experience requirements contained in ANSI/ANS-3.1 as endorsed and amended by RG 1.8 as they relate to the duties described in ANSI/ANS-3.1 and FSAR Table 14.2-203.
>
> In addition, individuals who:
>
> - develop or review testing, operating, and emergency procedures,
> - evaluate test deficiencies, propose or review the resolution to test deficiencies, or
> - evaluate test results for acceptability
>
> are qualified in accordance with ANSI/ANS-3.1 as endorsed and amended by RG 1.8. This includes architect-engineer personnel, other contract/vendor staff, and the site organization supporting preoperational and startup testing. Qualification requirements for architect-engineering personnel are consistent with engineering support positions defined in ANSI/ANS-3.1 (i.e., Section 4.4.10 for supervision and Section 4.6.1 for system engineers).

The exception to RG 1.8 Revision 3 is not specific to the ITP, but is addressed in Technical Specification 5.3.1, which states:

> Each member of the unit staff, with the exception of licensed Senior Reactor Operators (SRO) and licensed Reactor Operators (RO), shall meet

or exceed the minimum qualifications of Regulatory Guide 1.8, Revision 2, 1987.

Licensed Senior Reactor Operators (SRO) and licensed Reactor Operators (RO), shall meet or exceed the minimum qualifications of Regulatory Guide 1.8, Revision 3, May 2000.

RG 1.16 Reporting of Operating Information – Appendix A Technical Specifications (Rev. 4, August 1975)

The FSAR Table 1.9-201 exception to RG 1.16 pertains to the use of 10CFR50.72, 10CFR50.73 and Technical Specifications. The ITP startup report guidance of RG 1.16 referenced in DCD Subsection 14.2.6 and the general information in DCD Subsection 14.2.7 are not impacted by this exception. Therefore, DCD Subsections 14.2.6 and 14.2.7 are IBR and no RG 1.16 exception is applicable to FSAR Subsections 14.2.6 and 14.2.7.

In addition, RG 1.16 was withdrawn by the NRC on 08/11/2009 and this exception may be no longer effective to the FSAR. Therefore, "COLA FSAR Status" column of Table 1.9-201 has been replaced with "Not applicable" with the statement of "This RG was withdrawn on 08/11/2009."

RG 1.28, Quality Assurance Program Requirements (Design and Construction) (Rev. 3, August 1985)

RG 1.28 Revision 3 endorses ANSI/ASME NQA-1-1983 and ANSI/ASME NQA-1a-1983 Addenda, subject to additions and modifications as described in RG 1.28. The Quality Assurance Program (QAP) for CPNPP Units 3 and 4 is based on NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications." The exception to RG 1.28 identified in FSAR Table 1.9-201 reflects the use of more recent standards for the QAP and is not specific to FSAR Section 14.2. FSAR Section 17.3 explains the transition from the NuBuild Quality Assurance Project Plan (QAPP) based on ANSI/ASME N45.2-1971, to the QAP based on NQA-1-1994. A reference to Section 17.3 has been added to FSAR Table 1.9-201 for RG 1.28.

RG 1.30, Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (Rev. 0, August 1972)

Safety Guide 1.30 is based on ANSI N45.2.4-1972 and ANSI N45.2-1971. The QAP for CPNPP Units 3 and 4 is based on NQA-1-1994. The exception to Safety Guide 1.30 identified in FSAR Table 1.9-201 reflects the use of more recent standards for the QAP and is not specific to FSAR Section 14.2. FSAR Section 17.3 explains the transition from the NuBuild QAPP based on ANSI/ASME N45.2-1971 to the QAP based on NQA-1-1994. A reference to Section 17.3 has been added to FSAR Table 1.9-201 for Safety Guide 1.30.

RG 1.116, Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems (Rev. 0-R, May 1977)

RG 1.116 is based on ANSI N45.2.8-1975. The exception to RG 1.116 identified in FSAR Table 1.9-201 reflects the use of NQA-1-1994 Subpart 2.8, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants," which is endorsed by NUREG-0800 Section 17.5 Acceptance Criterion II.U.2.e. Regulatory Position C.3 in RG 1.116 endorses the use of RG 1.68 in conjunction with ANSI N45.2.8-1975. FSAR Table 1.9-201 indicates conformance to RG 1.68 without exception. The detailed discussion of the conformance to RG 1.68 is addressed in Appendix 14A. Therefore, the FSAR Table 1.9-201 position regarding RG 1.116 is consistent with current regulatory guidance (SRP 17.5 and RG 1.68

Rev. 3) as it pertains to the ITP. FSAR Section 17.3 explains the transition from the NuBuild QAPP based on ANSI/ASME N45.2-1971, to the QAP based on NQA-1-1994. A reference to Section 17.3 has been added to FSAR Table 1.9-201 for RG 1.116.

Impact on R-COLA

See attached marked-up FSAR Revision 1 pages 1.9-1, 1.9-4, 1.9-5 and 1.9-9 (on CD).

Impact on S-COLA

None.

Impact on DCD

None.

Attachment 4

Response to Request for Additional Information No. 4712 (CP RAI #163)

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.: 4712 (CP RAI #163)

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: 5/19/2010

QUESTION NO.: 14.02-17

Regulatory Basis: NUREG-0800, Standard Review Plan (SRP), Section 14.2

In your response to Question 14.02-4 of RAI 2954 (CP RAI #75) dated November 11, 2009 (ML093220204); you proposed to include some additional information in subsection 14.2.2 of the FSAR Revision 1. Specifically, you proposed to include a description of the education, training, qualification and experience requirements for individuals and organizations that support preoperational and startup testing. In addition, you also proposed to include Table 14.2-203 which compares the staff qualification requirements between ANSI-3.1-1993, MUAP-08009 and Table 13.1-201 of the FSAR. However, upon review of subsection 14.2.2 of the FSAR Revision 1, the description of the education, training, qualification and experience requirements and Table 14.2-203 are missing from subsection 14.2.2 of the FSAR Revision 1.

Therefore, the applicant is requested to:

1. Revise and update subsection 14.2.2 to include the description of the education, training, qualification and experience requirements for individuals and organizations that support preoperational and startup testing and also to include Table 14.2-203.

ANSWER:

The response to Question 14.02-4 was submitted on November 11, 2009, just nine days before COLA Revision 1 was submitted, and well-after the cut-off date for material to be included in COLA Revision 1. The information on marked-up FSAR pages 14.2-2 and 14.2-18 included in ML093220204 will be incorporated into COLA Revision 2.

Impact on R-COLA

None.

Impact on S-COLA

None.

Impact on DCD

None.

Attachment 5

Electronic Files Included on the Enclosed CD

RAI 4607-156

- Marked-up ER Revision 1 pages
- Marked-up FSAR Revision 1 pages
- Calculation TXUT-001-ER-5.3-CALC-005, Rev. 3
- Lake Granbury Water Samples

RAI 4613-158

- Marked-up FSAR Revision 1 pages
- TXUT-001-FSAR-13.3-CALC-026, Revision 2

RAI 4681-164

- Marked-up FSAR Revision 1 pages