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-201100526
Log # TXNB-11021

Ref. # 10 CFR 52

April 8, 2011

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. 5391 (SECTION 14.3.3) AND NO. 5609 (SECTION 3.7.1)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 5391 (CP RAI #212) and No. 5609 (CP RAI #209) for the Combined License Application (COLA) for Comanche Peak Nuclear Power Plant Units 3 and 4. The RAIs address wording in the ITAAC and artificial time histories of seismic motion, respectively.

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

The only commitment in this letter is to submit additional changes to COLA Part 10 in an Update Tracking Report in May 2011. This is being tracked as Regulatory Commitment # 8266.

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

Executed on April 8, 2011.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachments: 1. Response to Request for Additional Information No. 5391 (CP RAI #212)
2. Response to Request for Additional Information No. 5609 (CP RAI #209)

D090
NRO

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
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
william_mcconaghy@mnes-us.com
mutsumi_ishida@mnes-us.com
nan_sirirat@mnes-us.com
nicholas_kellenberger@mnes-us.com
ryan_sprengel@mnes-us.com
al_freitag@mnes-us.com
masaya_hoshi@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
Susan.Vrahoretis@nrc.gov
ComanchePeakCOL.Resource@nrc.gov
sfrantz@morganlewis.com
jrund@morganlewis.com
tmatthews@morganlewis.com
regina.borsh@dom.com
diane.aitken@dom.com

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.: 5391 (CP RAI #212)

SRP SECTION: 14.03.03 - Piping Systems and Components - Inspections, Tests, Analyses, and Acceptance Criteria

QUESTIONS for Engineering Mechanics Branch 1 (AP1000/EPR Projects) (EMB1)

DATE OF RAI ISSUE: 3/21/2011

QUESTION NO.: 14.03.03-5

This question is a follow-up to question 14.03.03-4, (2) of RAI Letter No 56 (2583).

As previously requested, the staff requests the applicant revise the ITAAC Number 5.b of Part 10, Table A.1-1. To bring consistency among all the columns in the ITAAC as well as clarify the seismic category of the piping systems, use the phrases "Seismic Category I piping" in the Design Commitment and "as-built Seismic Category I piping" in the Acceptance Criteria (AC) and Inspections, Tests, Analyses (ITA).

ANSWER:

Luminant agrees with the staff and Part 10 Table A.1-1, #5.b has been revised. Also, to be consistent with ITAAC improvements made in DCD Revision 3, a number of additional changes will be made to COLA Part 10 in an Update Tracking Report in May 2011.

Impact on R-COLA

See attached marked-up COLA Revision 1 Part 10 Appendix A.1 page 13.

Impact on S-COLA

This response is considered to be site-specific.

Impact on DCD

None.

Appendix A.1

Table A.1-1 (Sheet 3 of 6)

Ultimate Heat Sink System and Essential Service Water System (Portions Outside the Scope of the Certified Design) Inspections, Tests, Analyses, and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria	
4.a The ASME Code Section III components, identified in Table A.1-2, retain their pressure boundary integrity at their design pressure.	4.a A hydrostatic test will be performed on the as-built components required by the ASME Code Section III to be hydrostatically tested.	4.a The results of the hydrostatic test of the as-built components identified in Table A.1-2 as ASME Code Section III conform to the requirements of the ASME Code Section III.	
4.b The ASME Code Section III piping, identified in FSAR Table 3.2-201, retains its pressure boundary integrity at its design pressure.	4.b A hydrostatic test will be performed on the as-built piping required by the ASME Code Section III to be hydrostatically tested.	4.b The results of the hydrostatic test of the as-built piping identified in FSAR Table 3.2-201 as ASME Code Section III conform to the requirements of the ASME Code Section III.	
5.a The seismic category I equipment, identified in Table A.1-2, ~~can~~is designed to withstand seismic design basis loads without loss of safety function.	5.a.i Inspections will be performed to verify that the seismic category I as-built equipment identified in Table A.1-2 is installed in the location identified in FSAR Table 3.2-201.	5.a.i The seismic category I as-built equipment identified in Table A.1-2 is installed in the location identified in FSAR Table 3.2-201.	RCOL2_14.03.03-3
	5.a.ii Type tests and/or analyses of the seismic category I equipment will be performed.	5.a.ii The results of the type tests and/or analyses conclude that the seismic category I equipment can withstand seismic design basis loads without loss of safety function.	
	5.a.iii Inspections will be performed on the as-built equipment including anchorage.	5.a.iii The as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.	
5.b ~~Each of t~~The seismic ~~e~~Category I piping, including supports, identified in FSAR Table 3.2-201, ~~is designed to~~can withstand ~~combined normal and~~ seismic design basis loads without a loss of its ~~functional capability~~safety function.	5.b.i Inspections will be performed to verify that~~on~~ the as-built seismic Category I piping, including supports, identified in FSAR Table 3.2-201 is supported by a seismic Category I structure(s).	5.b.i ~~Each of t~~The as-built seismic ~~e~~Category I piping, including supports, identified in FSAR Table 3.2-201 ~~meets the~~is supported by a seismic ~~e~~Category I structure(s)~~requirements~~.	CTS-01174 RCOL2_14.03.03-4
	5.b.ii Inspections and analysis will be performed to verify that the as-built seismic Category I piping, including supports, identified in FSAR Table 3.2-201 can withstand seismic design basis loads without a loss of its safety function.	5.b.ii A report exists and concludes that the as-built seismic Category I piping, including supports, identified in FSAR Table 3.2-201 can withstand seismic design basis loads without a loss of its safety function.	RCOL2_14.03.07-29

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.: 5609 (CP RAI #209)

SRP SECTION: 03.07.01 - Seismic Design Parameters

QUESTIONS for Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

DATE OF RAI ISSUE: 3/15/2011

QUESTION NO.: 03.07.01-8

This RAI is necessary for the staff to determine if the application meets applicable requirements set forth in GDC 2 in Appendix A to 10 CFR Part 50, Appendix S to 10 CFR Part 50, and 10 CFR 100.23.

Information that was included in COLA FSAR 3.7.1.1 to address CP COL 3.7(30) states the following: "For the site-specific design of the ultimate heat sink related structures (UHSRS), essential service water pipe tunnel (ESWPT), and power source fuel storage vault (PSFSVs), one set of three statistically independent time histories of seismic motion is synthesized artificially for use as the input outcrop motion in the earthquake response analyses." Section II.B of NUREG-0800, Standard Review Plan (SRP) 3.7.1 Acceptance Criteria says that artificial time histories that are not based on seed recorded time histories should not be used. Also, after DCD RAI 3.7.1-3, MHI modified their approach to use seed time histories in their generation of the input motion (as reflected in MUAP-10001).

The staff requests the applicant confirm that the artificial time histories are generated based on seed recorded time histories. If the artificial ground motion time histories are not generated based on seed recorded time histories, the applicant should demonstrate that this approach does not lead to unrealistic seismic input that could affect the safety of CPNPP. If seed motions were used, describe the seed motions used and the basis for choosing the seed motions.

ANSWER:

The artificial time histories were generated starting from seed recorded time histories. The 3-component record from the LA University Hospital (ground floor) during the 1994 Northridge earthquake was used as the starting time history. This motion was recorded on rock. The basis for choosing this record was that the magnitude of the Northridge earthquake (**M** 6.7) is representative of the magnitudes of earthquakes dominating high-frequency ground motion for the Comanche Peak site, and the spectral content of the original motion led to characteristics of motion following spectral matching (duration, PGD/PGA, PGV/PGA, and $PGA*PGD/PGV^2$) that are reasonable.

Impact on R-COLA

See attached marked-up FSAR Revision 1 page 3.7-4

Impact on S-COLA

None; this response is site-specific

Impact on DCD

None.

plant is 1/3 of the site-specific FIRS shown in Figures 3.7-202 and 3.7-203. Option A is maintained for site-specific seismic category I structures; therefore, OBE is not a site-specific seismic design case.

CP COL 3.7(24) Replace the first sentence of the next-to-last paragraph in DCD Subsection 3.7.1.1 with the following.

In development of the site-specific GMRS, as provided in Subsection 2.5.2, the site-specific ratios V/A and AD/V^2 (A, V, D, are PGA, ground velocity, and ground displacement, respectively) are verified to be consistent with values characteristic for the magnitude and distance of the appropriate controlling events defining the site-specific uniform hazard response spectra.

CP COL 3.7(30) Replace the last paragraph in DCD Subsection 3.7.1.1.with the following

Site-Specific Design Ground Motion Time Histories and Durations of Motion

For the site-specific design of the UHSRS, ESWPT, and PSFSVs, one set of three statistically independent time histories of seismic motion is synthesized artificially for use as the input outcrop motion in the earthquake response analyses. The 3-component record from the LA University Hospital (ground floor) during the 1994 Northridge earthquake is used as the starting time history for these artificial time histories. The time histories are compatible with the minimum required design spectra discussed above. The three time histories are developed to represent the ground motion for the three orthogonal earthquake components, two horizontal ("H1" and "H2") and vertical ("V") following the requirements and conditions set in Section II of SRP 3.7.1 (Reference 3.7-10) for the development of a single set of time histories Option 1, Approach 2. Figures 3.7-204, 3.7-205, and 3.7-206 provide H1, H2, and V time histories, respectively, used for the design of UHSRS, ESWPT, and PSFSVs and site-specific verification analysis of US-APWR standard plant. Approach 2 is utilized with the objective to generate artificial acceleration time histories with response spectra which achieve approximately mean based fits to the site-specific FIRS target spectra, as shown in Figures 3.7-207, 3.7-208, and 3.7-209. The average ratio of the acceleration response spectra (ARS) calculated from the artificial time histories to the corresponding target spectra is kept only slightly greater than one. The spectral acceleration ratio is calculated frequency by frequency.

RCOL2_03.07.01-8

The time histories meet the requirements of Approach 2 steps (a) through (d) as follows:

a) Total duration is 40 seconds and the time step is 0.005 seconds (Nyquist frequency is 100 Hz). Note that the total duration of the artificial time histories is increased by zero packing.

b) Spectral accelerations at 5 percent damping are computed at a minimum of 100 points per frequency decade, uniformly spaced over the log frequency scale from 0.1 Hz to 100 Hz. A comparison of the response spectra obtained from the time histories to the FIRS spectra is made at each of the frequencies in this range.