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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 RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION 233 (6115) AND 249 (6316) (SECTIONS 2.5.4 AND 8.1)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein supplemental information for the response to Request for Additional Information (RAI) 233 (6115) and 249 (6316) for the Comanche Peak Nuclear Power Plant Units 3 and 4 Combined License Application. The supplemental information addresses the stability of safety-related foundations and the applicability of General Design Criterion 5 to the offsite power system.

Should you have any questions regarding the supplemental information, please contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com) or me. The electronic distribution addressees will receive Attachment 3 via e-mail rather than on CD. One file of figures for FSAR Subsection 2.5.4 on the CD contains Security-Related Information (SRI). The filename includes the term "SRI" and it should be withheld from the public. A public version of the file is provided and has "Public" in the filename.

There are no commitments in this letter.

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

Executed on October 7, 2013.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachments: 1. Supplemental Response to Request for Additional Information 233 (6115)
2. Supplemental Response to Request for Additional Information 249 (6316)
3. CD Containing Marked-up FSAR Subsections 2.0, 2.5.4 and 2.5.5, and Referenced Calculations

D090
NRO

cc: Stephen Monarque w/attachments (CD)

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Attachment 1

Supplemental Response to Request for Additional Information 233 (6115)

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 233 (6115)

SRP SECTION: 02.05.04 - Stability of Subsurface Materials and Foundations

QUESTIONS for Geosciences and Geotechnical Engineering Branch (RGS1)

DATE OF RAI ISSUE: 10/14/2011

QUESTION NO.: 02.05.04-26

NUREG-0800, Standard Review Plan (SRP), Chapter 2.5.4, "Stability of Subsurface Materials and Foundations," establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

In your response to NRC Hydrology Open Item 2.4.12-3, dated August 29, 2011, you modified the site grading and drainage plan which let to changes in the post-construction groundwater elevation surrounding the subgrade safety-related structures. The re-evaluated maximum groundwater elevation changed at the site from approximately elevation of 760 ft. to 813.5 ft. In order for the staff to complete its review to ensure the stability of safety-related foundations, please provided the following additional information:

1. Engineered backfill permeability assessment.
2. Groundwater effects on the static and dynamic lateral earth pressures acting on below-grade structures and walls.
3. Stability of permanent slopes located near the Ultimate Heat Sink considering any possible contact of shale interbeds with groundwater.
4. Reassessment of the information provided in response to RAI Letter Number 22 (2929)question 02.05.04-11 regarding chemical attack, erosion and leaching given the fact that foundation concrete and fill concrete might be exposed to groundwater. Also, please provide chemical tests and analysis for groundwater specifically for sulfate and chloride concentrations, and pH values.

SUPPLEMENTAL INFORMATION S01:

1. RAI 147 (4314) Question 02.04.12-9 also concerned the properties of backfill for which Luminant provided an initial response on August 26, 2010 (ML102440679). The engineered backfill permeability assessment was provided in project report TXUT-001-PR-020, dated March 15, 2013, which contains conservatively assumed ranges of hydraulic conductivity and porosity. This project report was submitted as Enclosure 1 of the supplemental response to Question 02.04.12-9 on April 29, 2013 (ML13168A228).

2. The stability of safety-related structures is addressed in FSAR Subsection 3.8.5.5. The increase in groundwater levels in the power block area to a nominal groundwater level of approximately El. 795 ft around the nuclear island or El. 804 ft within the closed basin formed by the essential

service water pipe tunnel (ESWPT) causes increases in the design-basis lateral static and dynamic lateral earth pressures acting on the walls of below-grade structures. Typical examples of earth pressures for yielding (free to displace at the top and rotate) and unyielding (restraint from displacement and rotation) below-grade walls are shown on FSAR Figures 2.5.4-242 and 2.5.4-243. The figures have not changed from FSAR Revision 3 and are supported by TXUT-001-FSAR-2.5-CALC-010 Rev. 4 (attached).

The reconciliation of the Reactor Building (R/B) Complex design in FSAR Section 3NN.6 demonstrated that the standard design envelopes the increased site-specific lateral pressures on below-grade walls. As described in FSAR Subsection 3.8.4.4.1.4, and Appendices 3KK, 3LL, and 3MM, the site-specific seismic Category I structures are designed using design lateral pressure loads that include hydrostatic pressure loads and dynamic earth pressure loads based on saturated unit weight of the backfill soil located below groundwater level. The result has been presented in Figure 3LL-29, Figure 3MM-9, and Figures 3NN-41 through 3NN-50.

3. The cross sections representing permanent slopes located near the ultimate heat sink related structures have been updated based on the latest Grading and Drainage drawings attached to supplemental response 03 to RAI 139 (4309) (ML13154A394) and captured on Figure 2.5.5-204. Five representative sections were selected and reanalyzed assuming a groundwater elevation of 804 ft within the engineered fill surrounding the main plant structures. Results of the stability evaluation of the revised sections and groundwater level demonstrate that both the static and seismic performance of the analyzed slopes are acceptable because the static slope stability factors of safety were higher than the minimum factor of safety of 1.5 and the pseudo-static slope stability factors of safety were higher than the minimum factory of safety of 1.1. No seismically-induced permanent slope displacement is expected during or after a design basis seismic event. This response is supported by TXUT-001-FSAR-2.5-CALC-018 Rev. 5 (attached).

4. The conclusion that chemical attack, erosion, and leaching are not potential issues does not change even with the revised groundwater level up to 804 ft, which will result in possible long-term exposure of the fill concrete to groundwater. As previously explained in the response to Question 02.05.04-11 (ML092440357), the fill concrete does not contain high amounts of calcium aluminate cement, there is no potential for sulfate attack due to the chemistry of the site soils, and the fill concrete is not a porous mix design. These conditions are also true for the foundation concrete. Therefore, no further reassessment of the information provided in response to Question 02.05.04-11 is required.

   Chemical tests and analyses results for groundwater showing the sulfate and chloride concentrations and pH values are provided in Table 2.3-50 of COLA Part 3, Environmental Report. In addition, FSAR Subsection 3.8.4.7 states that the ISI program includes periodic monitoring of groundwater chemistry to confirm that the groundwater remains nonaggressive.

Impact on R-COLA

See attached (on CD) marked-up FSAR Revision 3 pages:

2.5-134	2.5-170	2.5-197	2.5-206	2.5-218	2.5-222	2.5-237	2.5-241	2.5-495
2.5-158	2.5-182	2.5-203	2.5-208	2.5-219	2.5-223	2.5-238	2.5-244	2.5-497
2.5-162	2.5-192	2.5-204	2.5-209	2.5-220	2.5-224	2.5-239	2.5-245	
2.5-169	2.5-196	2.5-205	2.5-217	2.5-221	2.5-233	2.5-240	2.5-247	

See attached (on CD) FSAR Figures:

2.5.4-201	2.5.4-207	2.5.4-211	2.5.4-215	2.5.5-205	2.5.5-209	2.5.5-213	2.5.5-217
2.5.4-202	2.5.4-208	2.5.4-212	2.5.4-216	2.5.5-206	2.5.5-210	2.5.5-214	2.5.5-218
2.5.4-203	2.5.4-209	2.5.4-213	2.5.5-201	2.5.5-207	2.5.5-211	2.5.5-215	2.5.5-219
2.5.4-206	2.5.4-210	2.5.4-214	2.5.5-204	2.5.5-208	2.5.5-212	2.5.5-216	

FSAR Sections 3.7, 3.8 and Appendices 3KK, 3LL, 3MM and 3NN have been revised as outlined in the Comanche Peak Integrated Seismic Closure Plan (ISCP) and will be submitted in FSAR Updated Tracking Report Revision 3 currently scheduled for submittal by October 15, 2013.

Impact on DCD

None.

Attachments (on CD)

TXUT-001-FSAR-2.5-CALC-010 Rev. 4 – Lateral Earth Pressures

TXUT-001-FSAR-2.5-CALC-018 Rev. 5 – Slope Stability

Additionally, an evaluation was conducted of nine previous RAI responses that were potentially affected by the supplemental response to Question 02.05.04-26 above. The results of this evaluation are presented according to RAI Number and Question below.

1. Supplemental Response 01 to RAI 22 (2929) – Question No. 02.05.04-2 (ML093080096)

   The response is not impacted by the current set of revisions except that the properties of the 3-foot shale layer used in the SSI analyses were derived from the site response analyses performed in FSAR Subsection 2.5.2.6.3 based on properties in FSAR Table 2.5.2-212 instead of the values in the table in the response to Question 02.05.04-2.

   Impact on R-COLA

   See marked-up FSAR Revision 3 page 2.5-143 and Table 2.5.2-212 provided via FSAR Update Tracking Report Revision 1 (ML13154A337).

   Impact on DCD

   None.

2. Supplemental Response 01 to RAI 22 (2929) – Question 02.05.04-17 (ML093080096)

   The marked-up FSAR pages for this previously closed response have been revised to take into account the revised plant layout, foundation dimensions, and updated static and dynamic loading. The other inputs remain unchanged. The conclusions reached in the previous response are not impacted by these revisions as discussed below.

   A comparison of the ultimate bearing capacity and the static and dynamic demands for seismic Category I and II structures is provided in FSAR Table 3.8-202. The table shows that the ultimate bearing capacity compares very favorably to both the static and dynamic bearing pressures, and provides an adequate margin of safety.

   The total settlement analyses incorporating the revisions above are included in Calculation TXUT-001-FSAR-2.5-CALC-009 Rev. 3 (attached). The magnitude of total settlement for the

center points of the main structures for the lower bound model was conservatively estimated and calculated to be approximately 0.52 inch.

The R/B Complex foundation area was divided into nine zones based on estimates of the project-specific distribution of structural loads. Calculation TXUT-001-FSAR-2.5-CALC-009 Rev. 3 includes the idealized approximation of the bearing pressures for each zone. Foundation settlements were calculated along seven north-south lines for both the lower bound and the best estimate/upper rock profiles.

Settlement values calculated using the lower bound properties are:

- The maximum foundation settlement is approximately 0.41 inch.
- The maximum differential settlement within or between any of the seven lines in each direction is less than 0.33 inch.

Settlement values calculated using the best estimate/upper bound properties are:

- The maximum foundation settlement is approximately 0.22 inch.
- The minimum foundation settlement is approximately 0.07 inch.
- The maximum differential settlement within or between any of the seven lines in either direction is less than 0.15 inch.

Using the information presented above, it is concluded that if the structure is supported partially on rock with the lower bound shear modulus profile, and partially on rock with the best estimate/upper bound shear modulus profile, the maximum differential settlement across the foundation along the seven lines as discussed in Calculation TXUT-001-FSAR-2.5-CALC-009 Rev. 3 is approximately 0.34 inch. Furthermore, this estimate is conservative because the rigidity of the mat was ignored in the settlement calculations.

Impact on R-COLA

See attached (on CD) marked-up FSAR Revision 3 pages 2.0-11, 2.0-12, 2.0-13, 2.0-17, 2.5-215, 2.5-225, 2.5-232, 2.5-234, 2.5-491, 2.5-492, 2.5-493, and 2.5-494.

FSAR Subsection 3.8.5.4.4 has been revised as outlined in the Comanche Peak ISCP and will be submitted in FSAR Updated Tracking Report Revision 3 currently scheduled for submittal by October 15, 2013.

Impact on DCD

None.

Attachment

TXUT-001-FSAR-2.5-CALC-009 Rev. 3 – Settlement and Bearing Capacity

3. Supplemental Response 01 to RAI 22 (2929) – Question No. 02.05.04-18 (ML092820486)

The response is revised as follows:

Lateral loads can be resisted by an allowable passive soil pressure acting on the sides of the foundations. In addition, lateral loads may be resisted by friction acting along the side walls and the base of the foundation. Ultimate passive pressures are calculated for select granular backfill and are summarized on Figure 2.5.4-244. The upper 2 ft of passive resistance should be neglected unless the soil is confined by pavement or slab. This is supported by TXUT-001-FSAR-2.5-CALC-010 Rev. 4.

For concrete tightly poured against firm foundation limestone bedrock (at approximate elevation 782 ft), the base coefficient of friction of 0.6 is applicable for use between the base of concrete foundation/limestone bedrock interface, or the concrete foundation/concrete fill interface. The coefficient of friction is applied to net buoyant (dead, normal) loads for the portion of the structure that extends below the groundwater table. This is supported by TXUT-001-FSAR-2.5-CALC-041 Rev. 0 (attached).

The recommended coefficient of sidewall friction at the interface between the sidewall and the backfill soil is 0.35. This is supported by TXUT-001-FSAR-2.5-CALC-041 Rev. 0.

Impact on R-COLA

See attached (on CD) marked-up FSAR Revision 3 page 2.5-234.

FSAR Subsection 3.8.5.5.2 has been revised as outlined in the Comanche Peak ISCP and will be submitted in FSAR Updated Tracking Report Revision 3 currently scheduled for submittal by October 15, 2013.

Impact on DCD

None.

Attachment (on CD)

TXUT-001-FSAR-2.5-CALC-041 Rev. 0 - Coefficients of Sliding and Sidewall Friction

4. Supplemental Response 01 to RAI 22 (2929) – Question No. 02.05.04-19 (ML092820486)

   There is no impact due to changes in the groundwater levels because the sample calculations did not explicitly include the actual groundwater calculation, but used a variable to represent the groundwater level. The response is unchanged and is supported by TXUT-001-FSAR-2.5-CALC-010 Rev. 4.

   Impact on R-COLA

   None.

   Impact on DCD

   None.

5. Supplemental Response 01 to RAI 22 (2929) – Question No. 02.05.04-20 (ML092820486)

   The response is unchanged and is supported by TXUT-001-FSAR-2.5-CALC-009 Rev. 3.

   Impact on R-COLA

   None.

   Impact on DCD

   None.

6. Supplemental Response 01 to RAI 170 (4841) – Question 02.05.04-22 [TXNB-10062 (SRI)]

   The response text is unchanged. Updated plant layout and geometries are shown in the revised FSAR Figures listed below.

Figure 2.5.4-217 was evaluated for the potential need of revision. The figure is general and shows approximate detail, so although the R/B Complex bottom of foundation is at 779.75 ft as opposed to 782 ft, the figure approximate bottom of foundation at 782 ft corresponds to the targeted average elevation for the foundations and is general enough to cover values slightly above or below 782 ft. As a result, Figure 2.5.4-217 has not been revised.

Impact on R-COLA

See attached (on CD) revised FSAR Revision 3 Figures:

2.5.4-246	2.5.4-250	2.5.4-254	2.5.4-258
2.5.4-247	2.5.4-251	2.5.4-255	2.5.4-259
2.5.4-248	2.5.4-252	2.5.4-256	2.5.4-260
2.5.4-249	2.5.4-253	2.5.4-257	2.5.4-261

Impact on DCD

None.

7. Supplemental Response 01 to RAI 170 (4841) – Question 02.05.04-23 [TXNB-10062 (SRI)]

There is no change to the previous response except that in the response to Part 1, the reference to FSAR Table 3.7-203 should be deleted and the reference to FSAR Table 2.5.2-227 should be replaced with a reference to FSAR Table 2.5.2-212, which was provided in FSAR Update Tracking Report Revision 1 (ML13154A337).

Impact on R-COLA

None.

Impact on DCD

None.

8. Supplemental Response 01 to RAI 19 (2930) – Question 02.05.05-1 (ML093080096)

There is no change to the previous response except that the slope sections had been revised to incorporate the latest Grading and Drainage Plan attached to supplemental response 03 to RAI 139 (4309) (ML13154A394) and to incorporate a maximum conservative groundwater elevation of 804 ft.

As discussed in the earlier response, horizontal and vertical ground motions were considered in the analyses through the application of seismic coefficients to the potential slide mass. The magnitude of the horizontal coefficient was assumed to be equal to the US-APWR DCD minimum peak ground acceleration (PGA) of 0.10g. The magnitude of the vertical coefficient was conservatively set at 0.10g using a vertical-to-horizontal ratio equal to 1.0. This assumption is deemed to be conservative considering the region-specific geologic and seismic setting including the magnitude and site-to-source distance of the controlling seismic sources.

Both positive (downward) and negative (upward) vertical coefficients were considered. The orientation resulting in the lower factor of safety was considered to be the critical condition for each individual cross section.

Seismic slope performance is considered acceptable if pseudo-static slope stability analyses, in which the horizontal and vertical seismic coefficients are assumed to be equal to the PGA,

result in factors of safety greater than 1.1. The computed factors of safety range between 1.45 and 6.02 as shown in FSAR Table 2.5.5-203. These results demonstrate that the seismic performance of the analyzed slopes is acceptable and that no seismically-induced permanent slope displacement is expected at the CPNPP Units 3 and 4 site during and after the design basis seismic event. This response is supported by TXUT-001-FSAR-2.5-CALC-018 Rev. 5.

Impact on R-COLA

See attached (on CD) marked-up FSAR Revision 3 pages 2.5-245, 2.5-247, and 2.5-497, and Figures 2.5.5-215, 2.5.5-216, 2.5.5-217, 2.5.5-218, and 2.5.5-219.

Impact on DCD

None.

9. Supplemental Response 01 to RAI 19 (2930) – Question 02.05.05-2 (ML092740182)

The slope sections had been revised to incorporate the latest Grading and Drainage Plan attached to supplemental response 03 to RAI 139 (4309) (ML13154A394) and to incorporate a maximum conservative groundwater elevation of 804 ft. A comparison of the analysis performed for Cross Section E-E' in the previous response to this question clearly demonstrates a more critical case compared to the current cross section in FSAR Figure 2.5.5-216. As such, the previous conclusions reached are unchanged and are supported by TXUT-001-FSAR-2.5-CALC-018 Rev. 5.

Impact on R-COLA

None.

Impact on DCD

None.

Attachment 2

Supplemental Response to Request for Additional Information 249 (6316)

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.: 249 (6316)

SRP SECTION: 08.01 – Electric Power – Introduction

QUESTIONS for Instrumentation, Controls, and Electrical Engineering 1 (AP1000/EPR Projects) (ICE1)

DATE OF RAI ISSUE: 3/1/2012

QUESTION NO.: 08.01-3

The revised Section 8.1.2.1, "Utility Power Grid Description," FSAR markup of the final safety analysis report (FSAR) discusses Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4's compliance with 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 5. Revised Section 8.1.2.1 states that the switching station equipment shared between Unit 3 and 4 has the capacity and is configured such that sharing will not significantly impair its ability to provide offsite power in response to an accident in one unit and an orderly shutdown and cool down of the remaining unit. This section also states that adequate offsite power capacity exists to support both Units 3 and 4 during this scenario.

GDC 5 requires, in part, that structures, systems, and components (SSCs) important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cool down of the remaining units. During a clarification conference call on September 20, 2011, the NRC Staff and the applicant discussed the issue related to the capacity of offsite power to support the auxiliary loads of one unit connected to the switching station during an accident while providing for an orderly shutdown and cool down of the remaining unit. In a supplementary response to RAI 2576, Question 08.01-2, Open Item 08.01-1, submitted on October 17, 2011, the applicant provided some clarification of the issue discussed during the September 20, 2011 conference call. The staff verified the offsite power capacity by reviewing the study discussed in FSAR Subsection 8.2.2.2. The study addressed a number of contingencies including the simultaneous trip of CPNPP Units 3 and 4. The case studies show that the transmission system remains stable with slight voltage and frequency variation. The response to RAI 2576, Question 08.01-2 addresses the capacity question of the offsite power to support the auxiliary loads of one unit connected to the switching station during an accident while providing for an orderly shutdown and cool down of the remaining unit. However, it does not answer the question about the sharing of SSCs.

The staff requests the following additional information:

(1) Explain how the sharing of switching station equipment will not significantly impair the ability of that equipment to provide offsite power in response to an accident in one unit and an orderly shutdown and cool down of the remaining unit, and

(2) Demonstrate that adequate offsite power capacity exists to support both Units 3 and 4 during this scenario.

(3) The FSAR markup provided in the October 17, 2011 response to RAI 2576, Question 08.01-2 only mentions the switching station equipment as the shared equipment, excluding any other shared equipment in the switchyard such as the breakers. Confirm whether the switching station equipment is the only shared equipment among units.

(4) If there is no other equipment shared by Units 3 and 4 under any operating scenario (normal or emergency conditions) reflect this fact in the FSAR markup for clarification.

SUPPLEMENTAL INFORMATION S01:

This supplemental response replaces all statements in the responses to RAIs 9 (2576) and 249 (6316) regarding the applicability of General Design Criterion (GDC) 5 to the offsite power system for CPNPP Units 3 and 4 and regarding the presence or lack of components in the switching station which are important to safety. The content of FSAR Subsection 8.2.2.1 has been revised and new Subsection 8.2.2.1.1 has been added to address switching station criteria.

Impact on R-COLA

See attached marked-up FSAR Revision 3 pages 8.2-10, 8.2-11, 8.2-12, and 8.3-14.

Impact on DCD

None.

prevent it from performing its intended function is immediately identified by the main control room operator.

Methods and procedures for confirming the operational readiness of offsite power systems are provided to verify that main control room operators are aware of the capability of the offsite power system to supply power during operation and situation that can result in a loss of offsite power (LOOP) following a trip of the plant.

Adequate procedures, administrative controls, and protocols are implemented to ensure that no modifications of the offsite power system circuits credited for satisfying GDC 17 without the performance of a proper safety evaluation.

Grid reliability evaluations are performed for maintenance or modifications to the offsite power system, as part of the maintenance risk assessment required by 10 Code of Federal Regulations (CFR) 50.65 before performing "grid-risk-sensitive" maintenance activities. The results of the grid reliability evaluations are evaluated by the maintenance rule program which is described in Subsection 17.6.2.

Communication links exist between the main control room operators and ERCOT/Oncor as a means to obtain timely information on power grid operating conditions and status to verify the operability of the offsite power grid in accordance with the requirements of the technical specifications. Communications with ERCOT/Oncor exist for restoration of offsite power in the event of a LOOP or station blackout.

Real time analysis tools are provided to evaluate the impact of the loss or unavailability of various transmission system elements. The evaluation results of these analysis tools notify the main control room operators to provide compensatory actions for the event.

CP COL 8.2(1)

~~8.2.2.1 Applicable Criteria~~

RCOL2_08.01-2 S03

RCOL2_08.01-3 S01

~~Add the following sub-paragraph at the end of the third bullet of DCD Subsection 8.2.2.1:~~

~~GDC 5 applies to the CPNPP Units 3 and 4 switching station. The design of the switching station complies with GDC 5 because the switching station SSCs are not important to safety. In addition:~~

- ~~The offsite power system has adequate capacity to support the auxiliary loads of one unit connected to the switching station during an accident while providing for an orderly shutdown and cool down of the remaining unit.~~

- ~~The switching station equipment shared between Units 3 and 4, including the circuit breakers, has the capacity and is configured such that sharing will not significantly impair the ability to provide offsite power in response to an accident in one unit and an orderly shutdown and cool down of the remaining unit.~~

- ~~No SCCs which are important to safety are shared between Unit 3 and Unit 4 under any operating scenario (normal or emergency).~~

RCOL2_08.01-2 S03
RCOL2_08.01-3 S01

Add the following subsection after DCD Subsection 8.2.2.1.

8.2.2.1.1 Switching Station Criteria

The following bullets address the application of GDCs 2, 4 and 5 to the CPNPP plant switching station:

- GDC 2, "Design Bases for Protection Against Natural Phenomena"

  GDC 2 does not apply to the switching station.

- GDC 4, "Environmental and Dynamic Effects Design Bases"

  GDC 4 does not apply to the switching station.

- GDC 5, "Sharing of Structures, Systems and Components"

  GDC 5 applies to the CPNPP Units 3 and 4 plant switching station. The switching station is the common point of interconnection where offsite power is fed to the plant and the offsite power system is the normal preferred power source for the plant safety-related loads. The offsite power system also provides power during all modes of plant operation (including normal, emergency shutdown and postulated accident conditions) to all safety-related unit auxiliary and safety-related plant service loads that are required to be operational for orderly shutdown and cooldown.

  - The offsite power system has adequate capacity to support the auxiliary loads of one unit connected to the switching station during an accident while providing for an orderly shutdown and cool down of the remaining unit.

  - The switching station equipments shared between Units 3 and 4, including the circuit breakers, have the capacity and are configured such that sharing will not significantly impair the ability to provide offsite power in response to an accident in one unit and an orderly shutdown and cool down of the remaining unit.

~~CP COL 8.2(11)~~ ~~Add the following new subsections after DCD Subsection 8.2.2.1.~~

RCOL2_08.01-3 S01

CP COL 8.2(11)

8.2.2.2 Grid Reliability and Stability Analysis

Oncor has performed a transient stability study for the proposed addition of CPNPP Units 3 and 4 generation facility to the ERCOT transmission network in accordance with BTP 8-3. The CPNPP Units 3 and 4 connect to the ERCOT network via four 345 kV transmission tie lines to the plant switching station and four 345 kV outgoing transmission lines, as discussed in Subsection 8.2.1.1. The purpose of this study is to determine if the expansion of this facility causes the proposed or existing nearby generators to experience transient instability for selected planning criteria contingencies. This study indicates that neither the proposed nor existing nearby generators experience transient instability for the selected planning criteria contingencies that have been considered.

This study, and its conclusions, is based on preliminary data and is subject to review using final data to be provided prior to the interconnection of the proposed generating facility expansion with the Oncor transmission system.

The pertinent details of the Oncor transient stability study are summarized below:

The study was conducted in accordance with the ERCOT Generation Interconnection or Change Request Procedure using a 2015 summer peak case projected from the 2012 ERCOT summer peak base case. The ERCOT dynamics database associated with the 2010 summer peak base case was modified for compatibility with the 2015 base case.

A series of contingencies consistent with the ERCOT planning criteria were applied to selected locations in the vicinity of CPNPP. The contingencies studied include the loss, as a result of a single event, of the largest generation capacity being supplied to the grid, removal of the largest load from the grid or loss of the most critical transmission line. The assumptions of this study are the following:

- All system elements were assumed to be in service prior to the contingency being simulated.
- Disturbances were modeled as close-in, normally-cleared faults by primary relaying and faults with stuck or hung breaker, cleared by back up protection.
- Normal clearing time for the primary relaying was assumed to be 4 cycles with one re-close attempt at 60 cycles.
- Selected machine rotor angles were monitored for indications of instability.

The expected contingencies are the following:

A summary of a grid stability analysis is provided in Subsection 8.2.2.2 and the grid stability conforms to this requirement.

STD COL 8.2(11) Replace the last sentence of the eighth paragraph in DCD Subsection 8.2.3 with the following.

A transmission system reliability analysis is provided in Subsection 8.2.2.2.

CP COL 8.3(12) Condition monitoring of underground or inaccessible cables within the scope of the maintenance rule (10 CFR50.65) is incorporated into the maintenance rule program. The cable condition monitoring program incorporates lessons learned from industry operating experience, address regulatory guidance, and utilizes information from detailed design and procurement documents to determine the appropriate inspections, tests, and cable monitoring criteria within the scope of the maintenance rule described in Subsection 17.6.2. The program takes into consideration Generic Letter 2007-01.

8.2.4 Combined License Information

Replace the content of DCD Subsection 8.2.4 with the following.

CP COL 8.2(1) ***8.2(1)*** *Utility power grid and transmission line*

This Combined License (COL) Item is addressed in Subsections 8.1.2.1, 8.2.1.1, 8.2.1.2.3, 8.2.2.1.1, Table 8.2-201, Table 8.2-202, and Figure 8.2-201. RCOL2_08.01-3 S01

8.2(2) *Deleted from the DCD.*

CP COL 8.2(3) ***8.2(3)*** *Switchyard description*

This COL Item is addressed in Subsections 8.1.1, 8.2.1.2.1, 8.2.1.2.1.1, 8.2.1.2.1.2, 8.2.1.2.2, Figure 8.1-1R, Figure 8.2-202, Figure 8.2-203, Figure 8.2-204, Figure 8.2-205, Figure 8.2-206, Figure 8.2-207, Figure 8.2-208, Figure 8.3.1-1R and Figure 8.3.1-2R.

CP COL 8.2(4) ***8.2(4)*** *Normal preferred power*

This COL Item is addressed in Subsection 8.2.1.2, Figure 8.2-202, Figure 8.2-203, Figure 8.2-207 and Figure 8.2-208.

CP COL 8.2(5) ***8.2(5)*** *Alternate preferred power*

This COL Item is addressed in Subsection 8.2.1.2, Figure 8.2-202, Figure 8.2-204, Figure 8.2-207 and Figure 8.2-208.

8.2(6) *Deleted from the DCD.*

Attachment 3

CD Containing Marked-up FSAR Subsections 2.0, 2.5.4 and 2.5.5, and Referenced Calculations

The following files are included on the attached CD:

FSAR 2.0, 2.5.4 and 2.5.5 Text and Tables.pdf
FSAR 2.5.4 figures (Public).pdf
FSAR 2.5.4 figures (SRI).pdf
FSAR 2.5.5 figures.pdf
TXUT-001-FSAR-2.5-CALC 009 R3.pdf
TXUT-001-FSAR-2.5-CALC 010 R4.pdf
TXUT-001-FSAR-2.5-CALC 018 R5.pdf
TXUT-001-FSAR-2.5-CALC 041 R0.pdf