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CP-201000367  
Log # TXNB-10019

Ref. # 10 CFR 52

March 5, 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 (RAI) NO. 4372 AND  
SUPPLEMENTAL RESPONSE TO RAI NO. 3295

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 4372 and supplemental information for the response to RAI 3295 for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. RAI No. 4372 involves the Evacuation Time Estimate performed for Units 3 and 4 while RAI No. 3295 involves the Emergency Action Levels.

Should you have any questions regarding these responses, 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 March 5, 2010.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

- Attachments: 1. Response to Request for Additional Information No. 4372 (CP RAI #137)  
2. Supplemental Response to Request for Additional Information No. 3295 (CP RAI #70)

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Electronic distribution w/ attachments

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U. S. Nuclear Regulatory Commission  
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## **Attachment 1**

**Response to Request for Additional Information No. 4372 (CP RAI #137)**

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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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**Comanche Peak, Units 3 and 4**

**Luminant Generation Company LLC**

**Docket Nos. 52-034 and 52-035**

**RAI NO.: 4372 (CP RAI #137)**

**SRP SECTION: 13.03 - Emergency Planning**

**QUESTIONS for Licensing and Inspection Branch (NSIR/DPR/LIB) (EP)**

**DATE OF RAI ISSUE: 2/18/2010**

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**QUESTION NO.: 13.03-37**

**Open Item 13.03-06:** Subject: ETE Methodology

[Basis: 10 CFR 50 Appendix E (IV). Appendix 4 to NUREG-0654 Section I.C]

Acceptance Criteria: NUREG-0800, Standard Review Plan, Section 13.3, "Emergency Planning," Requirements A and H; Acceptance Criterion 11

By letter dated January 25, 2010, the NRC staff issued RAI 134 (RAI No. 4224) for Section 13.03 – Emergency Planning. This RAI provided Questions 13.03-30 through 13.03-36. After the issuance of this RAI, the NRC staff reviewed the questions and determined that several changes were necessary. First, the NRC staff has determined that RAI 134 (RAI No. 4224), Question 13.03-34 regarding Luminant's evacuation time estimate will be deleted.

Next, the NRC staff has revised RAI 134 (RAI No. 4224), Question 13.03-35 for clarification. As such, RAI 134 (RAI No. 4224), Question 13.03-35 has been replaced in its entirety with the following question below.

In response to RAI 13.03-18.D, the applicant stated that no credit is taken for improved traffic operations where traffic personnel are located. However, as described in the response to RAI 13.03-18.A, the applicant adjusted the allocation of green time so that it balances the competing traffic volumes as a means to consider traffic control. Therefore, the applicant is requested to clarify whether or not the current analysis approximates the use of manned traffic control points based on the manner in which the analyst adjusts green time at intersections where traffic control guides are present.

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**ANSWER:**

The ETE does not approximate the use of manned traffic control points based on the adjustment of green time at signalized intersections. Luminant's November 12, 2009 response to Question 13.03-18 (ML093510531) acknowledged that signal green time utilized by the evacuation model is dependent on traffic volume at signalized intersections. As stated in Luminant's response to Question 13.03-18, part A, the analyst adjusts the allocation of green time in the simulation model so that it services the

competing traffic volumes and the movement of traffic under evacuation conditions. In this manner, the model is executed in an iterative procedure so as to provide assurance that the allocations of "effective green time" at intersections appropriately represent the operating conditions during an evacuation. The actual signal timing may not be optimum to accommodate the actual traffic environment during an evacuation. Accordingly, the actual signal control may be inefficient in that it allocates an insufficient amount of green time to service the approaches with heavier evacuation flows, thereby contributing to congested conditions. Under these circumstances, evacuees who are restrained on the approach to an intersection by a red signal indication will probably treat the red signal as a flashing red signal (functionally, a stop sign) and cautiously discharge into the intersection when there is an absence of completing cross street traffic. In this case, drivers evacuating from an area will effectively "adjust" the signal split to be more favorable in supporting their need to evacuate the area. The allocation of green time in the simulation model provides a realistic representation of this human behavior, but does not reflect the implementation of manual traffic controls during an evacuation.

As stated in Luminant's response to Question 13.03-18, part A, the goal of this ETE modeling activity is to realistically represent the traffic environment during emergency evacuation conditions. Consistent with this objective, the signal splits input into the model are adjusted to represent realistic human behavior during emergency evacuation based on traffic conditions, but are not treated optimally as though there are expert traffic control personnel controlling the signal at all times. The outcome of this approach to developing ETE estimates is to provide realistic estimates of evacuation time to the appropriate State and local authorities.

As described in Luminant's response to Question 13.03-18, ETE Report Revision 2 Section 2.3 (Assumption 6), Section 9, and Appendix G have been revised to provide additional detail on the treatment of Traffic Control Points (TCPs) in this study. These TCPs are not considered in specifying the inputs to the DYNEV model used to calculate the ETE. As suggested by NUREG-0654, Appendix 4, Section V, the ETE study should include "specific recommendations for actions that could be taken to significantly improve evacuation time." Based on this guidance, the ETE includes suggested TCPs and Access Control Points (ACPs) in Appendix G that could be considered by local law enforcement personnel during an evacuation in order to reduce evacuation times. Because the number of TCPs and ACPs that will be staffed is subject to availability of qualified individuals, the degree of implementation of TCPs and ACPs is uncertain and therefore not considered in computing the ETE.

In summary, the adjustment of green times to balance competing traffic volumes at intersections is not done as a means of modeling traffic control. Rather, it is done to realistically represent the traffic environment during emergency evacuation conditions.

Section 2.3 of the ETE Report has been revised to reflect this information as Assumption 11.

#### Impact on R-COLA

See attached marked-up ETE Report Revision 2 page 2-6 and its insert.

Proposed revisions to the ETE Report require review by State and local governments prior to implementation. The revised ETE report incorporating the proposed changes described in this response will be submitted to the NRC following State and local concurrence.

#### Impact on S-COLA

None.

#### Impact on DCD

None.

- c. School children, if school is in session, are given priority in assigning transit vehicles.
  - d. Bus mobilization time is considered in ETE calculations.
  - e. Analysis of the number of required "waves" of transit vehicles used for evacuation is presented.
8. Provisions are made for evacuating the transit-dependent portion of the general population to Reception Centers by bus, based on the assumption that some of these people will ride-share with family, neighbors, and friends, thus reducing the demand for buses. We assume that the percentage of people who rideshare is 50 percent. This assumption is based upon reported experience for other emergencies<sup>3</sup>, which cites previous evacuation experience.
9. One type of adverse weather scenario (rain) is considered; rain may occur for either winter or summer scenarios. It is assumed that the rain begins prior to, or at about the same time the evacuation advisory is issued. No weather-related reduction in the number of transients who may be present in the EPZ is assumed. Adverse weather scenarios affect roadway capacity, free flow highway speeds and the time required to mobilize the general population. The factors assumed for the ETE study are:

Scenario	Highway Capacity*	Free Flow Speed*	Mobilization Time
Rain <sup>4</sup>	90%	90%	No Effect
*Rain capacity and speed values are given as a percentage of good weather conditions. Roads are assumed to be passable.			

10. School buses used to transport students are assumed to have the capacity to transport 70 children per bus for elementary schools, and 50 children per bus for middle and high schools. Transit buses used to transport the transit-dependent general population are assumed to transport an average of 30 people per bus.

← Insert A

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<sup>3</sup> Institute for Environmental Studies, University of Toronto, THE MISSISSAUGA EVACUATION FINAL REPORT, June 1981. The report indicates that 6,600 people of a transit-dependent population of 8,600 people shared rides with other residents; a ride share rate of 76% (Page 5-10).

<sup>4</sup> Agarwal, M. et. Al. Impacts of Weather on Urban Freeway Traffic Flow Characteristics and Facility Capacity, Proceedings of the 2005 Mid-Continent Transportation Research Symposium, August, 2005.

**Section 2.3:**

**INSERT A:**

11. The goal of the ETE modeling activity is to realistically represent the traffic environment during emergency evacuation conditions. Consistent with this objective, it is assumed that all drivers will respond safely to traffic control regardless of whether that control is implemented by a traffic signal, a stop sign or by traffic control personnel at a TCP. The signal splits input into the model are adjusted to represent realistic human behavior during emergency evacuation based on traffic conditions, but are not treated optimally as though there is expert traffic control personnel controlling the signal at all times. The outcome of this approach to developing ETE estimates is to produce realistic estimates of evacuation time.

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U. S. Nuclear Regulatory Commission  
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## **Attachment 2**

### **Supplemental Response to Request for Additional Information No. 3295 (CP RAI #70)**

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**SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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**Comanche Peak, Units 3 and 4**

**Luminant Generation Company LLC**

**Docket Nos. 52-034 and 52-035**

**RAI NO.: 3295 (CP RAI #70)**

**SRP SECTION: 13.03 - Emergency Planning**

**QUESTIONS for Licensing and Inspection Branch (NSIR/DPR/LIB) (EP)**

**DATE OF RAI ISSUE: 9/20/2009**

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**QUESTION NO.: 13.03-1**

**SITE-4: Emergency Action Levels (EALs)**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4), Section IV.B of Appendix E to 10 CFR Part 50

**EALs are discussed in Part 5 – Emergency Plan, Appendix 1 of the Comanche Peak Units 3 and 4 COL application.**

D.1. The initial EALs, which are required by 10 CFR 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50, must be approved by the NRC. Recent combined license (COL) applications have been submitted that do not fully address certain aspects of the required EAL scheme. This is because various equipment set points and other information cannot be determined until the as-built information is available; e.g., head corrections, radiation shine, final technical specifications, and equipment calculations and tolerances. The NRC has been evaluating possible options to ensure applicants address the regulations and provides the following options:

Option 1 – Submit an entire EAL scheme, which contains all site-specific information, including set points. Until this information is finalized, EALs would remain an open item.

Option 2 – Submit emergency plan Section D, "Emergency Classification System," which addresses the four critical elements of an EAL scheme (listed below). The NRC will determine the acceptability of the EAL scheme.

*Critical Element 1* – Applicant proposes an overview of its emergency action level scheme including defining the four emergency classification levels, (i.e., Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency), as stated in NEI 99-01, Revision 5, with a general list of licensee actions at each emergency classification level.

*Critical Element 2* – Applicant proposes to develop the remainder of its EAL scheme by using a specified NRC endorsed guidance document. In the development of its EALs, the proposed EALs should be developed with few or no deviations or differences, other than those attributable to the specific reactor design. NEI 07-01, if endorsed, will be applicable to the AP1000 and

ESBWR (passive) reactor designs, and NEI 99-01 is applicable to all (non-passive) reactor designs. If applicable, EALs related to digital instrumentation and control must be included. The NRC must find in the Safety Evaluation Report that this approach is acceptable for each site.

*Critical Element 3* – Applicant proposes a License Condition (LC) that the applicant will create a fully developed set of EALs in accordance with the specified guidance document. These fully developed EALs must be submitted to the NRC for confirmation at least 180 days prior to fuel load.

*Critical Element 4* – The EALs must be kept in a document controlled by 10 CFR 50.54(q), such as the emergency plan; or a lower tier document, such as the Emergency Plan Implementing Procedures.

Please review the two options provided above, identify which option will be chosen, and provide the detailed EAL information in support of the chosen option.

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#### **SUPPLEMENTAL INFORMATION:**

In the response to this question in letter TXNB-09072 submitted November 18, 2009 (ML093240321), the proposed license condition stated:

The licensee shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with NEI 99-01, Revision 5, with few differences or deviations...

Based on a conference call conducted with the NRC on December 9, 2009, Luminant has clarified the wording of the proposed license condition as follows:

The licensee shall complete development of the site-specific Emergency Action Levels (EALs) presented in Appendix 1 to the Comanche Peak Nuclear Power Plant Units 3 & 4 Combined License Application Emergency Plan in accordance with NEI 99-01, Revision 5, with few differences or deviations...

#### Impact on R-COLA

See attached marked-up Part 10 Revision 1 page 4

#### Impact on S-COLA

None.

#### Impact on DCD

None.

**Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 10 - ITAAC and Proposed License Conditions**

Proposed License Condition	Source
The plant-specific PTS evaluation of the as-procured reactor vessel material properties will be submitted to the NRC within 12 months following acceptance of the reactor vessel.	Answer to RAI 2353 (CP RAI #8) question 05.03.02-3 as provided in TXNB-09028 dated August 7, 2009.
The licensee shall implement the programs or portions of programs identified in the table below on or before the associated milestones.	COLA FSAR Table 13.4-201 Items 3, 5, 6, 8, 9, 10, 12, 15, 18, and 19.
<p><u>A. Prior to the full-participation exercise to be conducted in accordance with the requirements of Appendix E to 10 CFR Part 50, Luminant shall establish Letters of Agreement with the following entities:</u></p> <p><u>a. Governors Division of Emergency Management (GDEM), Texas Department of Public Safety</u></p> <p><u>b. Texas Department of State Health Services</u></p> <p><u>c. Hood County Judge</u></p> <p><u>d. Somervell County Judge</u></p> <p><u>These Letters of Agreement will identify the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear units and certify the agency's concurrence with the emergency action levels described in Comanche Peak Units 3 &amp; 4 Combined License Application Emergency Plan Procedure, "Assessment of Emergency Action Levels, Emergency Classification and Plan Activation."</u></p> <p><u>B. The licensee shall complete development of the site-specific Emergency Action Levels (EALs) presented in Appendix 1 to the Comanche Peak Nuclear Power Plant Units 3 &amp; 4 Combined License Application Emergency Plan in accordance with NEI 99-01, Revision 5, with few differences or deviations. The fully developed site-specific EAL scheme shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.</u></p>	<p><u>Answer to RAI 3295 (CP RAI #70) question 13.03-1 and RAI 3327 (CP RAI #78) questions 13.03-2 and 13.03-8.</u></p>

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Operational Programs to be implemented per License Condition above:

Program Title	Milestone
Environmental Qualification Program	Prior to Initial Fuel Load
Reactor Vessel Material Surveillance Program	Prior to Initial Criticality