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July 16, 2012

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. 6449  
(SECTION 13.3)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein the response to Request for Additional Information (RAI) No. 6449 (CP RAI #258) for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. The RAI addresses emergency action levels.

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

There are no commitments in this letter.

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

Executed on July 16, 2012.

Sincerely,

Luminant Generation Company LLC

*Donald R. Woodlan for*

Rafael Flores

Attachment: Response to Request for Additional Information No. 6449 (CP RAI #258)

*DO90  
NRO*

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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.: 6449 (CP RAI #258)**

**SRP SECTION: 13.03 - Emergency Planning**

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

**DATE OF RAI ISSUE: 5/21/2012**

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### **QUESTION NO.: 13.03-43**

Open Item-13.03-13: 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

In its September 16, 2010, response to RAI No. 3295 (ADAMS Accession No. ML102630014), Luminant provided a table (entitled "EAL Differences and Deviations from NEI Guidance") that identifies differences between the proposed Comanche Peak Units 3 and 4 emergency action levels (EALs) and NRC-endorsed NEI 99-01 (Revision 5) and NEI 07-01 (Revision 0). The staff has determined that additional information is needed in regard to the level of detail in the table associated with the differences from NEI 99-01 that relate to digital instrumentation and control (I&C) EALs given that Luminant has not committed to a specific digital I&C platform. Specifically, for referenced EALs associated with digital I&C (i.e., EALs: CU7, CA7, SA7, and SS7), provide – as a supplement to the table – the proposed new EALs, or EAL sets, in the same format as NEI 07-01, which include (as applicable) the initiating condition, operating modes, notes, EAL threshold(s), basis information, and developer guidance for how a particular set-point is (or will be) determined. Revise the table, as appropriate, to address these four EALs. It should be noted that initiating conditions CU7 and SA7 should be identical and based upon a partial loss of digital I&C (currently SA7 is based upon a full loss of digital I&C and therefore should be revised). In addition, initiating conditions CA7 and SS7 should be identical and based upon a full loss of digital I&C. Please revise accordingly or provide justification of why this is not necessary.

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### **ANSWER:**

#### Level of Detail in Table Noting Differences with NEI 99-01

Luminant incorporated Chapter 7 of the US-APWR DCD by reference without exception in the Comanche Peak Units 3 and 4 Combined License Application (COLA). DCD Section 7.1 summarizes the I&C as follows:

The overall I&C system consists of the safety-related protection and safety monitoring system (PSMS) with the safety-related portion of the HSIS, the non safety-related plant control and monitoring system (PCMS), the non safety-related DAS, and the non safety-

related portion of the HSIS. The HSIS consists of safety-related safety VDUs, post accident monitoring (PAM), non safety-related operational VDUs, and non safety-related LDP for normal plant operation. The safety VDUs and operational VDUs are located on both the operator console (OC) in the main control room (MCR) and the remote shutdown console (RSC) in the remote shutdown room (RSR). Operational VDUs are also provided for information only (i.e., no control capability) at the technical support center (TSC).

Information to support emergency response operations (the same as provided on operational VDUs) is provided at the emergency operations facility (EOF).

No level of detail changes are necessary for the digital I&C in the EAL Differences and Deviations from NEI Guidance Table provided in Appendix 1 of the CPNPP Units 3 & 4 Emergency Plan (EAL Table) in as much as Luminant has incorporated by reference the US-APWR DCD digital I&C with no departures. However, to clarify the FSAR, the EAL Table has been revised to remove the "NEI 07-01, Rev. 0" column.

#### Provide Proposed EALs or EAL Sets in Same Format as NEI 07-01

The EAL Table includes the initiating condition, operating modes, and EAL threshold(s) for CU7 (equivalent to CPNPP Units 3 & 4 EAL CU9), CA7, SA7, and SS7. The EAL Table has been revised to include notes stating that CPNPP Units 3 & 4 EALs CU9, CA7, SA7, and SS7 follow the format of NEI 07-01. The revised EALs include the initiating condition, operating modes, notes, EAL threshold(s), and basis information. As there are no set-points associated with defining the loss of digital control systems, the request for developer guidance for how a particular set-point is (or will be) determined is not applicable to these EALs.

#### Initiating Conditions CU7 and SA7

Luminant has revised EAL SA7 to refer to a "*partial loss of*" rather than "*loss of all*" indicating, monitoring and control functions. SA7 is included as a supplement to the EAL Table.

#### Initiating Conditions CA7 and SS7

Luminant noted that EAL CA7 was incorrectly labeled as CA9 in the "CPNPP Units 3 & 4 Preliminary EALs" column and has corrected the error in the revised EAL Table. EALs CA7 (CA9) and SS7 are worded identically and are based upon a full loss of digital I&C. Accordingly, no change to the language in the EAL Table is necessary.

In addition to the changes discussed above, EAL CU2 has been added as a supplement to the EAL Table as discussed in the response to Question 13.03-45 below.

#### Impact on R-COLA

See attached marked-up CPNPP Units 3 & 4 Emergency Plan, Revision 3, Appendix 1 pages A1-1 through A1-17.

#### Impact on S-COLA

None; this response is site-specific.

#### Impact on DCD

None.



Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 5 - Emergency Plan

EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 4)		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		IC		IC		
None		CU7	<p><del>Initiating Condition—NOTIFICATION OF UNUSUAL EVENT</del></p> <p><del>UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for ≥ 15 Minutes.</del></p> <p><del>Operating Mode Applicability: Cold Shutdown, Refueling</del></p> <p><del>Example Emergency Action Level Threshold:</del></p> <p><del>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</del></p> <p>1. UNPLANNED partial Loss of [Site specific] Indicating, Monitoring, and Control Functions for 15 minutes or longer.</p>	CU9	<p>Initiating Condition – NOTIFICATION OF UNUSUAL EVENT</p> <p>UNPLANNED partial loss of indicating, monitoring and control functions for ≥ 15 Minutes.</p> <p>Operating MODE Applicability: Cold Shutdown, Refueling</p> <p>Emergency Action Level Threshold:</p> <p>1. UNPLANNED partial loss of Protection and Safety Monitoring System (PSMS) and Plant Control and Monitoring System (PCMS) indicating, monitoring and control functions for 15 minutes or longer.</p>	<p><b>Deviation:</b> There is no analogous Cold Shutdown or Refueling IC in NEI 99-01. NEI 99-01 considers an analog control and annunciators for the current fleet of reactors. The US-APWR incorporates an advanced digital instrumentation and control system. Guidance provided in NEI 07-01, Rev. 0, was used to develop the loss of digital I&amp;C for the US-APWR. The digital I&amp;C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p><b>Differences:</b> <del>The Emergency Director note was not included. This is procedural information incorporated in training. EAL CU9 has been provided as supplemental information to this Table.</del></p>
None		CA7	<p><del>Initiating Condition—ALERT</del></p> <p><del>Inability to Monitor and Control the Plant for ≥ 15 Minutes.</del></p> <p><del>Operating Mode Applicability: Cold Shutdown, Refueling</del></p> <p><del>Example Emergency Action Level Threshold:</del></p> <p><del>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</del></p> <p>1. UNPLANNED Loss of [Site specific] Digital Monitoring and Control Functions for 15 minutes or longer.</p>	CA9Z	<p>Initiating Condition – ALERT</p> <p>Inability to Monitor and Control the Plant for ≥ 15 Minutes.</p> <p>Operating MODE Applicability: Cold Shutdown, Refueling</p> <p>Emergency Action Level Threshold:</p> <p>1. UNPLANNED Loss of all PSMS, PCMS, and DAS Digital Monitoring and Control Function for 15 minutes or longer.</p>	<p><b>Deviation:</b> There is no analogous Cold Shutdown or Refueling IC in NEI 99-01. NEI 99-01 considers an analog control and annunciators for the current fleet of reactors. The US-APWR incorporates an advanced digital instrumentation and control system. Guidance provided in NEI 07-01, Rev. 0, was used to develop the loss of digital I&amp;C for the US-APWR. The digital I&amp;C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p><b>Differences:</b> <del>The Emergency Director note was not included. This is procedural information incorporated in training. EAL CA7 has been provided as supplemental information to this Table.</del></p>

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RCOL2\_13.0  
3-45

**Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 5 - Emergency Plan  
EAL Differences and Deviations from NEI Guidance**

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		IC		IC		
SU3	<p>Initiating Condition – NOTIFICATION OF UNUSUAL EVENT</p> <p>UNPLANNED loss of safety system annunciation or indication in the control room for 15 minutes or longer.</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Level:</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.</i></p> <p>1. UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer:</p> <p>a. (Site specific control room safety system annunciation)</p> <p>OR</p> <p>b. (Site specific control room safety system indication)</p>	None		None		<p><b>Deviation:</b></p> <p>There is no analogous IC for a digital control system. Hence, loss of monitoring and control immediately escalates to ALERT via SA7. NEI 99-01 considers analog control and annunciators for the current fleet of reactors. The US-APWR incorporates an advanced digital instrumentation and control system. Guidance provided in NEI 07-01, Rev. 0, was used to develop the loss of digital I&amp;C for the US-APWR. The digital I&amp;C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p><u>SU3 related to annunciator malfunctions, has been modified as presented in NEI 99-01 to address the digital control systems in the US-APWR.</u></p>



**Comanche Peak Nuclear Power Plant, Units 3 & 4**  
**COL Application**  
**Part 5 - Emergency Plan**  
**EAL Differences and Deviations from NEI Guidance**

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 4)		CPNPP Units 3 & 4 Preliminary EALS		Justification	RCOL2_13.0 3-43 RCOL2_13.0 3-45
IC		IC		IC			
SA4	<p>Initiating Condition – ALERT</p> <p>UNPLANNED loss of safety system annunciation or indication in the control room with EITHER (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators unavailable.</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Level:</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.</i></p> <p>1.</p> <p>a. UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer:</p> <ul style="list-style-type: none"><li>(Site specific control room safety system annunciation)</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>(Site specific control room safety system indication)</li></ul> <p>b. EITHER of the following:</p> <ul style="list-style-type: none"><li>A SIGNIFICANT TRANSIENT is in progress.</li><li>Compensatory indications are unavailable</li></ul>	<p><del>SA7</del></p> <p><del>Initiating Condition – ALERT</del></p> <p><del>UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for ≥ 15 Minutes.</del></p> <p><del>Operating Mode Applicability: Power Operation, Startup, Hot Standby/Shutdown, Safe/Stable Shutdown</del></p> <p><del>Example Emergency Action Level Threshold:</del></p> <p><del><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</i></del></p> <p>1. <del>UNPLANNED partial Loss of (Site specific) Indicating, Monitoring and Control Functions for 15 minutes or longer.</del></p>	<p>SA7</p> <p>Initiating Condition – ALERT</p> <p>UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for ≥ 15 Minutes.</p> <p>Operating MODE Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Emergency Action Level Threshold:</p> <p>1. UNPLANNED <u>partial</u> Loss of All Protection and Safety Monitoring System (PSMS) and Plant Control and Monitoring System (PCMS) Indicating, <u>and</u> Monitoring, <u>and Control</u> Functions for 15 minutes or longer.</p>	<p><b>Deviation:</b> NEI 99-01 considers analog control and annunciators for the current fleet of reactors. The US-APWR incorporates an advanced digital instrumentation and control system. Guidance provided in NEI 07-01, Rev. 0, was used to develop the loss of digital I&amp;C for the US-APWR. The digital I&amp;C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p><b>Differences:</b> <del>The Emergency Director note was not included. This is procedural information incorporated in training SA4, related to annunciator malfunctions, has been modified as presented in NEI 99-01 to address the digital control systems in the US-APWR.</del></p> <p><u>To preserve the integrity of the EAL numbering basis presented in NEI 99-01, and ensure consistency with Units 1 and 2 EAL numbering scheme, this EAL is numbered SA7.</u></p> <p><u>EAL SA7 has been provided as supplemental information to this table.</u></p>			

**Comanche Peak Nuclear Power Plant, Units 3 & 4**  
**COL Application**  
**Part 5 - Emergency Plan**  
**EAL Differences and Deviations from NEI Guidance**

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		IC		IC		
SS6	<p>Initiating Condition – SITE AREA EMERGENCY</p> <p>Inability to monitor a SIGNIFICANT TRANSIENT in progress.</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Level:</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.</i></p> <p>1.</p> <p>a. UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer:</p> <ul style="list-style-type: none"><li>(Site specific control room safety system annunciation)</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>(Site specific control room safety system indication)</li></ul> <p>AND</p> <p>b. A SIGNIFICANT TRANSIENT is in progress.</p> <p>AND</p> <p>c. Compensatory indications are unavailable.</p>	<p><del>SS7</del> <del>Initiating Condition – SITE AREA EMERGENCY</del></p> <p><del>Inability to Monitor and Control the Plant for &gt; 15 minutes.</del></p> <p><del>Operating Mode Applicability: Power Operation, Startup, Hot Standby/Shutdown, Safe/Stable Shutdown</del></p> <p><del>Example Emergency Action Level Threshold:</del></p> <p><del><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</i></del></p> <p>1. UNPLANNED Loss of (Site specific) Digital Monitoring and Control Functions for 15 minutes or longer.</p>	SS7	<p>Initiating Condition – SITE AREA EMERGENCY</p> <p>Inability to Monitor and Control the Plant for ≥ 15 minutes.</p> <p>Operating MODE Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Emergency Action Level Threshold:</p> <p>1. UNPLANNED Loss of all PSMS, PCMS, and DAS digital monitoring and control function for 15 minutes or longer.</p>	<p><b>Deviation:</b></p> <p>NEI 99-01 considers analog control and annunciators for the current fleet of reactors. The US-APWR incorporates an advanced digital instrumentation and control system. Guidance provided in NEI 07-01, Rev. 0, was used to develop the loss of digital I&amp;C for the US-APWR. The digital I&amp;C systems used in the US-APWR are comparable to the Westinghouse AP1000 specifically addressed in NEI 07-01.</p> <p><b>Differences:</b></p> <p><del>The Emergency Director note was not included. This is procedural information incorporated in training SS6, related to annunciator malfunctions, has been modified as presented in NEI 99-01 to address the digital control systems in the US-APWR.</del></p> <p><u>To preserve the integrity of the EAL numbering basis presented in NEI 99-01 and ensure consistency with Units 1 and 2 EAL numbering scheme, this EAL is numbered SS7.</u></p> <p><u>EAL SS7 has been provided as supplemental information to this table.</u></p>	

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**Comanche Peak Nuclear Power Plant, Units 3 & 4**  
**COL Application**  
**Part 5 - Emergency Plan**  
**EAL Differences and Deviations from NEI Guidance**

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification	
IC		IC		IC			
CU2	<p>Initiating Condition – NOTIFICATION OF UNUSUAL EVENT</p> <p>UNPLANNED loss of RCS/RPV Inventory</p> <p>Operating Mode Applicability: Refueling</p> <p>Example Emergency Action Levels (1 or 2)</p> <p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</p> <p>1. UNPLANNED RCS/RPV level drop as indicated by either of the following:</p> <ul style="list-style-type: none"><li>RCS/RPV water level drop below the RPV flange for 15 minutes or longer when the RCS/RPV level band is established above the RPV flange.</li><li>RCS/RPV water level drop below the RCS level band for 15 minutes or longer when the RCS/RPV level band is established below the RPV flange.</li></ul> <p>2. RCS/RPV level cannot be monitored with a loss RCS/RPV inventory as indicated by an unexplained level rise in (site specific sump or tank).</p>	CU2	Not applicable to US APWR	CU2	<p>Initiating Condition – NOTIFICATION OF UNUSUAL EVENT</p> <p>UNPLANNED loss of RCS/RV Inventory</p> <p>Operating MODE Applicability: Refueling</p> <p>Emergency Action Level Thresholds: (1 or 2)</p> <p><u>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</u></p> <p>1. UNPLANNED RCS/RV level drop indicated by RCS/RV water level drop below the RV flange (site-specific Threshold Value on RCS Level wide range (L-402)) for 15 minutes or longer.</p> <p>2. RCS/RV level cannot be monitored with a loss of RCS/RV inventory as indicated by an unexplained level rise in ANY one of the following:</p> <ul style="list-style-type: none"><li>Refueling Water Storage Pit Level on L-1400, L-1401, L-1402, L-1403</li><li>Containment Vessel Reactor Coolant Drain Tank (CVDT) Level on L-1000</li><li>Pressurizer Relief Tank Level on L-560</li><li>CCW Surge Tank (Train A &amp; B) Level on L-1200 and L-1201 for Train A, L-1210 and L-1211 for Train B</li><li>Containment Sump Level on L-1083</li></ul>	<p><b>Deviation:</b></p> <p>EAL Threshold #1 deviates from NEI 99-01 because an EAL Threshold is not provided for an established RCS/RV level band as being above or below the RV flange prior to the "UNPLANNED RCS/RV level drop." As stated in the NEI 99-01 basis, "Refueling evolutions that decrease RCS water level below the RPV flange are carefully planned and procedurally controlled." If already below the flange due to a planned evolution, an unplanned RCS drop will simply expedite the transition to an Alert. The EAL Threshold provided accommodates an unplanned RCS/RV level drop below the RV flange.</p> <p><b>Differences:</b></p> <p><del>The Emergency Director note was not included. This is procedural information incorporated in training.</del></p> <p>Note:</p> <p>CPNPP preliminary EAL is consistent with NEI 99-01 EAL Threshold #2.</p> <p><u>EAL CU2 has been provided as supplemental information to this table.</u></p>	<p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p> <p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p> <p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p>

Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 5 - Emergency Plan  
EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		IC		IC		
HA1	<p>Initiating Condition – ALERT</p> <p>Natural or destructive phenomena affecting VITAL AREAS.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4 or 5 or 6)</p> <p><del>4</del> 4. Turbine failure-generated PROJECTILES resulting in VISIBLE DAMAGE to or penetration of ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems:</p> <p>(site specific structure list)</p>	<del>HA1</del>	<del>Not applicable to US-APWR</del>	<del>HA1</del>	EAL Threshold #4 not included.	<p><b>Deviation:</b> <del>The turbine generator of the US-APWR is configured in such a way that damage to components indicated in this EAL is not possible.</del> 99-01, HA1, Threshold #4 states "Turbine failure-generated PROJECTILES resulting in VISIBLE DAMAGE to or penetration of ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems." HA 1, EAL #4 related to VISIBLE DAMAGE affecting safety systems from a turbine failure is not included because of specific design features incorporated into the US-APWR design. The physical orientation of the turbine/generator prevents any potential for turbine failure-generated projectiles to damage structures containing safety systems or components. Therefore, HA1 Threshold #4 is not included.</p> <p>Note: CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, 3, 5, and 6.</p>

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Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 5 - Emergency Plan  
EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification	
IC		IC		IC			
AU1	<p>Initiating Condition – NOTIFICATION OF UNUSUAL EVENT</p> <p>Any release of gaseous or liquid radioactivity to the environment greater than 2 times the Radiological Effluent Technical Specifications/ODCM for 60 minutes or longer.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4 or 5)</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.</i></p> <p>4. VALID reading on perimeter radiation monitoring system reading greater than 0.10 mR/hr above normal* background for 60 minutes or longer. [for sites having telemetered perimeter monitors]</p> <p>5. VALID indication on automatic real-time dose assessment capability indicating greater than (site specific value) for 60 minutes or longer. [for sites having such capability]</p> <p>*Normal can be considered as the highest reading in the past twenty-four hours excluding the current peak value</p>	AU1	Not applicable to US APWR	AU1	EAL Thresholds #4 and 5 not included.	<p><del>Differences:</del></p> <p><del>The Emergency Director note was not included. This is procedural information incorporated in training.</del></p> <p><del>Difference:</del></p> <p><del>Neither perimeter monitoring nor automatic real time dose assessment is installed in CPNPP Units 3 and 4. Consistent with NEI 99-01, Rev 5, neither perimeter monitoring nor automatic real time dose assessment is installed in CPNPP Units 3 and 4. Therefore Thresholds #4 and 5 do not apply and are not included.</del></p> <p><del>Note:</del></p> <p><del>CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 3.</del></p>	<p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p> <p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p>



Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 5 - Emergency Plan  
EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification	
IC		IG		IC			
AA1	<p>Initiating Condition – ALERT</p> <p>Any release of gaseous or liquid radioactivity to the environment greater than 200 times the Radiological Effluent Technical Specifications/ODCM for 15 minutes or longer.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4 or 5)</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.</i></p> <p>4. VALID reading on perimeter radiation monitoring system reading greater than 10.0 mR/hr above normal* background for 15 minutes or longer. [for sites having telemetered perimeter monitors]</p> <p>5. VALID indication on automatic real-time dose assessment capability indicating greater than (site specific value) for 15 minutes or longer. [for sites having such capability]</p> <p>*Normal can be considered as the highest reading in the past twenty-four hours excluding the current peak value</p>	AA1	Not applicable to US APWR	AA1	EAL Thresholds #4 and 5 not included.	<p><del>Difference:</del> <del>The Emergency Director note was not included. This is procedural information incorporated in training.</del></p> <p>Difference: <del>Neither perimeter monitoring nor automatic real-time dose assessment is installed CPNPP Units 3 and 4.</del> Consistent with NEI 99-01, Rev 5, neither perimeter monitoring nor automatic real time dose assessment is installed in CPNPP Units 3 and 4. Therefore Thresholds #4 and 5 do not apply and are not included.</p> <p>Note: CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 3.</p>	<p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p> <p>RCOL2_13.0 3-43 RCOL2_13.0 3-45</p>



Comanche Peak Nuclear Power Plant, Units 3 & 4  
COL Application  
Part 5 - Emergency Plan  
EAL Differences and Deviations from NEI Guidance

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification	
IC		IG		IC			
AS1	<p>Initiating Condition – SITE AREA EMERGENCY</p> <p>Off-site dose resulting from an actual or IMMINENT release of gaseous radioactivity greater than 100 mrem TEDE or 500 mrem Thyroid CDE for the actual or projected duration of the release.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4)</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.</i></p> <p>3. VALID perimeter radiation monitoring system reading greater than 100 mR/hr for 15 minutes or longer. [for sites having telemetered perimeter monitors]</p>	AS4	Not applicable to US-APWR	AS1	EAL Threshold #3 not included.	<p><del>Difference:</del> <del>The Emergency Director note was not included. This is procedural information incorporated in training.</del></p> <p>Difference: <del>Perimeter monitoring is not installed in CPNPP Units 3 and 4. Consistent with NEI 99-01, Rev 5, perimeter monitoring is not installed in CPNPP Units 3 and 4. Therefore Thresholds #3 does not apply and is not included.</del></p> <p>Note: CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 4.</p>	RCOL2_13.0 3-43 RCOL2_13.0 3-45  RCOL2_13.0 3-43 RCOL2_13.0 3-45

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**EAL Differences and Deviations from NEI Guidance**

NEI 99-01, Rev. 5		NEI 07-01, Rev. 0 (see Note 4)		CPNPP Units 3 & 4 Preliminary EALS		Justification	RCOL2_13.0 3-43 RCOL2_13.0 3-45
IC		IC		IC			
AG1	<p>Initiating Condition – GENERAL EMERGENCY</p> <p>Off-site dose resulting from an actual or IMMINENT release of gaseous radioactivity greater than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the actual or projected duration of the release using actual meteorology.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4)</p> <p><i>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.</i></p> <p>3. VALID perimeter radiation monitoring system reading greater than 1000 mR/hr for 15 minutes or longer, [for sites having telemetered perimeter monitors]</p>	AG1	Not applicable to US APWR	AG1	EAL Threshold #3 not included.	<p><b>Difference:</b>  <del>The Emergency Director note was not included. This is procedural information incorporated in training.</del></p> <p><b>Difference:</b>  <del>Perimeter monitoring is not installed in CPNPP Units 3 and 4. Consistent with NEI 99-01, Rev 5, perimeter monitoring is not installed in CPNPP Units 3 and 4. Therefore Thresholds #3 does not apply and is not included.</del></p> <p><b>Note:</b>            CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, and 4.</p>	RCOL2_13.0 3-43 RCOL2_13.0 3-45
HU1	<p>Initiating Condition – NOTIFICATION OF UNUSUAL EVENT</p> <p>Natural or destructive phenomena affecting the PROTECTED AREA.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4 or 5)</p> <p>5. (Site specific occurrences affecting the PROTECTED AREA).</p>	HU1	Not applicable to US APWR	HU1	EAL Threshold # 5 not included.	<p><b>Difference:</b>  <del>No site specific occurrences affecting the Protected Area were identified. NEI 99-01 EAL Threshold #5 addresses other site specific phenomena (such as hurricane, flood or seiche) that can also be precursors of more serious events. No additional site specific occurrences affecting the Protected Area were identified.</del></p> <p><b>Note:</b>            CPNPP preliminary EALs are consistent with NEI 99-01 EAL Thresholds #1, 2, 3, and 4.</p>	RCOL2_13.0 3-43 RCOL2_13.0 3-45

Comanche Peak Nuclear Power Plant, Units 3 & 4  
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EAL Differences and Deviations from NEI Guidance

NEI-99-01, Rev. 5		NEI-07-01, Rev. 0 (see Note 1)		CPNPP Units 3 & 4 Preliminary EALS		Justification
IC		IC		IC		
SUS	<del>Initiating Condition — NOTIFICATION OF UNUSUAL EVENT</del>  <del>Inadvertent criticality.</del>  <del>Operating Mode Applicability: Hot Standby, Hot Shutdown</del>  <del>Example Emergency Action Level:</del>  <del>1. UNPLANNED sustained positive startup rate observed on nuclear instrumentation (PWR)</del>	SUS	Not applicable to US APWR	SUS	<del>Initiating Condition — NOTIFICATION OF UNUSUAL EVENT</del>  <del>Inadvertent criticality.</del>  <del>Operating Mode Applicability: Hot Standby, Hot Shutdown</del>  <del>Emergency Action Level Threshold:</del>  <del>1. UNPLANNED sustained positive startup rate observed.</del>	<del>Difference:</del> Operators are trained and understand that a positive startup rate can only be observed on nuclear instrumentation. CPNPP Units 3 and 4 SUS provides discussion on information and basis.

Note 1: NEI-07-01, Revision 0, is relevant to the US APWR to address Initiating Conditions and Emergency Action Levels for digital instrumentation and control. All other Initiating Conditions and Emergency Action Levels are based on NEI-99-01, Revision 5.

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45



Comanche Peak Nuclear Power Plant, Units 3 & 4  
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**COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION**

**CU9**

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45

**Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT**

UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for  $\geq 15$  Minutes.

**Operating Mode Applicability:**                      Cold Shutdown, Refueling

*Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.*

**Emergency Action Level Threshold:**

1.     UNPLANNED partial Loss of Protection and Safety Monitoring System (PSMS) and Plant Control and Monitoring System (PCMS) Indicating, Monitoring and Control Functions for 15 minutes or longer.

**Basis:**

This IC recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the control and indication systems.

This IC recognizes the challenge to the Control Room staff to monitor and control the plant due to partial loss of normal and safety indication and monitoring systems. A Notification of Unusual Event level is considered appropriate for this partial loss of indication and control IC due to the inherently safer condition of the core when in the cold condition. Escalation to an Alert will be via CA7 if a complete loss of control and indication occurs. Declaration of the Alert will provide the Control Room staff with additional personnel to assist in monitoring alternative indications, manipulating equipment and restoring the systems to full capability. The selection of 15 minutes was chosen to allow personnel sufficient time for restoration of required systems due to an inadvertent loss.

The PSMS provides the functions necessary to protect the plant during normal operations, to shutdown the plant, and to maintain the plant in a safe shutdown condition. The PCMS includes the control functions that provide for the control of the nuclear process, conversion of nuclear energy into heat energy, and transport of the heat energy from the nuclear reactor to the main steam turbine. The Diverse Actuation System (DAS) remains available to ensure monitoring and control capability. Loss of DAS would result in escalation to CA7.

Comanche Peak Nuclear Power Plant, Units 3 & 4  
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**COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION**

**CA7**

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45

**Initiating Condition -- ALERT**

Inability to Monitor and Control the Plant for  $\geq 15$  Minutes.

**Operating Mode Applicability:**                      Cold Shutdown, Refueling

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

**Example Emergency Action Level Threshold:**

1.     Loss of all PSMS, PCMS, and DAS Digital Monitoring and Control Function for 15 minutes or longer.

**Basis:**

This IC recognizes the inability of the Control Room staff to monitor and control the plant due to loss of normal and safety indication and monitoring systems, and diverse indication and control systems that allow the operators to monitor and safely shutdown the plant. An Alert level is considered appropriate for this IC due to the inherently safer condition of the core when in the cold condition. Declaration of the Alert will provide the Control Room staff with additional personnel to assist in monitoring alternative indications, manipulating equipment and restoring the systems to full capability. The selection of 15 minutes was chosen to allow personnel sufficient time for restoration of required systems due to an inadvertent loss.

The PSMS provides the functions necessary to protect the plant during normal operations, to shutdown the plant, and to maintain the plant in a safe shutdown condition. The PCMS includes the control functions that provide for the control of the nuclear process, conversion of nuclear energy into heat energy, and transport of the heat energy from the nuclear reactor to the main steam turbine. The DAS is a non-safety related system that provides a diverse backup to the protection system.



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**COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION**

**SA7**

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45

**Initiating Condition - ALERT**

UNPLANNED Partial Loss of Indicating, Monitoring and Control Functions for  $\geq 15$  Minutes.

**Operating MODE Applicability:**                      Power Operation, Startup, Hot Standby,  
Hot Shutdown

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

**Emergency Action Level Threshold:**

1.     UNPLANNED partial loss of Protection and Safety Monitoring System (PSMS) and Plant Control and Monitoring System (PCMS) Indicating, Monitoring and Control Functions for 15 minutes or longer.

**Basis:**

This IC recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the control and indication systems.

This IC recognizes the challenge to the Control Room staff to monitor and control the plant due to partial loss of normal and safety indication and monitoring systems. An Alert is considered appropriate if the Control Room staff requires additional personnel to assist in monitoring alternative indications, manipulate equipment and restore the systems to full capability. The selection of 15 minutes was chosen to allow personnel sufficient time for restoration of required systems due to an inadvertent loss.

The PSMS provides the functions necessary to protect the plant during normal operations, to shutdown the plant, and to maintain the plant in a safe shutdown condition. The PCMS includes the control functions that provide for the control of the nuclear process, conversion of nuclear energy into heat energy, and transport of the heat energy from the nuclear reactor to the main steam turbine. The Diverse Actuation System (DAS) remains available to ensure monitoring and control capability. Loss of DAS would result in escalation to SS7 due to the operating crew being unable to monitor and control the plant.

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**COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION**

**SS7**

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45

**Initiating Condition - SITE AREA EMERGENCY**

Inability to Monitor and Control the Plant for  $\geq 15$  Minutes.

**Operating MODE Applicability:**      Power Operation, Startup, Hot Standby,  
Hot Shutdown

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

**Emergency Action Level Threshold:**

1.      Loss of all PSMS, PCMS, and DAS Digital Monitoring and Control Function for 15 minutes or longer.

**Basis:**

This IC recognizes the inability of the Control Room staff to monitor the plant due to loss of normal and safety indication and monitoring systems, and diverse indication and control systems that allow the operators to monitor and safety shutdown the plant. A SAE is considered to exist if the Control Room staff cannot monitor safety functions needed for protection of the public. The selection of 15 minutes was chosen to allow personnel sufficient time for restoration of required systems due to an inadvertent loss.

The PSMS provides the functions necessary to protect the plant during normal operations, to shutdown the plant, and to maintain the plant in a safe shutdown condition. The PCMS includes the control functions that provide for the control of the nuclear process, conversion of nuclear energy into heat energy, and transport of the heat energy from the nuclear reactor to the main steam turbine. The DAS remains available to ensure monitoring and control capability. The DAS is a non-safety related system that provides a diverse backup to the protection system.



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**COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION**

**CU2**

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45

**Initiating Condition - NOTIFICATION OF UNUSUAL EVENT**

UNPLANNED loss of RCS/RV inventory.

**Operating MODE Applicability:**            Refueling

**Emergency Action Level Thresholds: (1 or 2)**

*Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.*

1.    UNPLANNED RCS/RV level drop indicated by RCS/RV water level drop below the RV flange {site-specific Threshold Value on RCS Level wide range (L-402)} for 15 minutes or longer.
2.    RCS/RV level cannot be monitored with a loss of RCS/RV inventory as indicated by an unexplained level rise in **ANY** one of the following:
  - Refueling Water Storage Pit Level on L-1400, L-1401, L-1402, L-1403
  - Containment Vessel Reactor Coolant Drain Tank (CVDT) Level on L-1000
  - Pressurizer Relief Tank Level on L-560
  - CCW Surge Tank (Train A & B) Level on L-1200 and L-1201 for Train A, L-1210 and L-1211 for Train B
  - Containment Sump Level on L-1083

**Basis:**

This IC is a precursor of more serious conditions and considered to be a potential degradation of the level of safety of the plant.

Refueling evolutions that decrease RCS water level below the RV flange are carefully planned and procedurally controlled. An UNPLANNED event that results in water level decreasing below the RV flange, or the planned RCS water level for the given evolution (if the planned RCS water level is already below the RV flange), warrants declaration of a NOUE due to the reduced RCS inventory that is available to keep the core covered.



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The allowance of 15 minutes was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame then it may indicate a more serious condition exists.

RCOL2\_13.0  
3-43  
RCOL2\_13.0  
3-45

Continued loss of RCS Inventory will result in escalation to the Alert emergency classification level via either CA1 or CA4.

Note: The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling MODEs. In cold shutdown, the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling MODE, the RCS is not intact and RV level and inventory are monitored by different means.

EAL #1

This EAL involves a decrease in RCS level below the top of the RV flange that continues for 15 minutes due to an UNPLANNED event. This EAL is not applicable to decreases in flooded reactor cavity level, which is addressed by AU2 EAL1 until such time as the level decreases to the level of the vessel flange.

If RV level continues to decrease and reaches the Outlet Nozzle Bottom Inner Diameter (ID) of the RCS Loop then escalation to CA1 would be appropriate.

EAL Threshold #1: The value for RCS Level wide range (L-402) will be inserted when this information becomes available.

EAL #2

This EAL addresses conditions in the refueling MODE when normal means of core temperature indication and RCS level indication may not be available. Redundant means of RV level indication is installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RV inventory loss was occurring by observing sump and tank level changes. Sump and tank level increases must be evaluated against other potential sources of LEAKAGE such as cooling water sources inside the containment to ensure they are indicative of RCS LEAKAGE.

Escalation to the Alert emergency classification level would be via either CA1 or CA4.

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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.: 6449 (CP RAI #258)**

**SRP SECTION: 13.03 - Emergency Planning**

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

**DATE OF RAI ISSUE: 5/21/2012**

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**QUESTION NO.: 13.03-44**

Open Item-13.03-14: 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

On page II-36, within Section D "Emergency Classification System" of Revision 2 of the CPNPP 3 and 4 Emergency Plan it states "the classification system is not intended to include minor deviations during normal operation." Please justify this statement, as it is not the staff's position to discard consideration of emergency classifications should an applicant consider those classifications to be "minor deviations." There are EALs within the 99-01 Rev. 5 EAL scheme that specifically allow for minor deviations by the inclusion of a timing statement, but this information must be sufficiently justified, submitted for review, and approved by the NRC staff. Please revise Section D of the CPNPP 3 and 4 Emergency Plan accordingly or provide justification of why this is not necessary.

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**ANSWER:**

In developing the CPNPP Units 3 & 4 Emergency Plan, Luminant endeavored to ensure consistency with the operating Units 1 & 2 Emergency Plan. The language in question was included to emphasize that the emergency classification scheme takes into account minor but expected deviations for certain plant parameters during normal operations. However, to prevent any misunderstanding with respect to Luminant's intent and long-standing operational practices, the sentence cited in the question has been replaced with "Some EALs allow for minor deviations during normal operation through the inclusion of a timing statement."

**Impact on R-COLA**

See attached marked-up CPNPP Units 3 & 4 Emergency Plan, Revision 3, page II-36.

**Impact on S-COLA**

None; this response is site-specific.

Impact on DCD

None.

**Comanche Peak Nuclear Power Plant, Units 3 & 4**  
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**D. Emergency Classification System**

Luminant implements the standard emergency classification scheme discussed below based on system and effluent parameters, on which the State of Texas and Somervell and Hood Counties may rely for determining minimum initial off-site response measures.

The ICs include the conditions provided in NEI 99-01, "Methodology for Development of Emergency Action Levels," Rev. 5 (Reference 7) as applied to US-APWR facilities and postulated accidents identified in the FSAR. The US-APWR uses a digital control system that is not addressed in NEI 99-01. Accordingly, related guidance in NEI 07-01, "Methodology for Development of Emergency Action Levels for Advanced Passive Light Water Reactors," Rev. 0 (Reference 8) is used. EALs established for each emergency classification have been accepted by off-site authorities responsible for implementing protective measures for the population-at-risk.

~~The classification system is not intended to include minor deviations during normal operation.~~ Some EALs allow for minor deviations during normal operation through the inclusion of a timing statement. Furthermore, it may be discovered that an event or condition, which met the classification criteria had existed, but that the basis for the emergency class no longer exists at the time of discovery. For example, the event may have rapidly concluded or been discovered during a post-event review. As discussed in NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Rev. 2 (Reference 9), actual declaration of an emergency class is not necessary in these circumstances, although notification to the NRC, the State of Texas and Somervell and Hood County agencies is warranted.

RCOL2\_13.0  
3-44

**1. Classification System**

Appendix E of 10 CFR Part 50 identifies four distinct classes of emergencies: NOUE, Alert, SAE, and GE.

ICs that determine the appropriate classification are generally described in the following paragraphs. Appendix 1 provides detailed ICs and EALs based on specific instrument readings, parameters or equipment status used to determine whether an emergency class threshold has been reached. If plant conditions change in severity, the situation is reassessed and reclassified (if appropriate) and corresponding actions are taken.

The definitions of these emergency classes, more fully discussed in NEI 99-01, and a general list of licensee actions at each emergency class level are as follows:

- NOUE – Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of



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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.: 6449 (CP RAI #258)**

**SRP SECTION: 13.03 - Emergency Planning**

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

**DATE OF RAI ISSUE: 5/21/2012**

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### **QUESTION NO.: 13.03-45**

Open Item-13.03-15: 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

In letter dated September 16, 2010, Luminant provided supplemental information for response to request for additional information (RAI) NO. 3295 dated November 18, 2009. The supplemental information involved the Emergency Action Levels in the Emergency Plan and the additional information supplemented Luminant letter TXNB-10019 submitted on March 5, 2010 (ADAMS Accession No ML100700262). Upon the staff's review of the supplemental information provided, the staff has determined that the justification for the revision of the initiating conditions for SU3, CU2, HA1, AU1, AA1, AS1, AG1, HU1, and SU8 needs to be enhanced in order for the staff to reach an independent decision of reasonable assurance. Please revise accordingly or provide justification of why this is not necessary.

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### **ANSWER:**

Luminant has revised the EAL Table based upon the deviations and differences between the guidance provided in NEI 99-01, Rev. 5, and the US-APWR initiating conditions for SU3, CU2, HA1, AU1, AA1, AS1, AG1, HU1, and SU8. These revisions were provided with the response to Question 13.03-43 above. The following additional information provide justification for the revisions:

Initiating Condition SU3: The US-APWR uses a digital control system for plant monitoring and control. The safety system annunciation or indication in the control room discussed in NEI 99-01, Rev. 5, for this initiating condition is provided through the PSMS, PCMS, and DAS, which are described in DCD Chapter 7. As discussed in the EAL Table, Luminant has identified the approach for addressing US-APWR loss of annunciation and indication as a deviation from NEI 99-01, Rev. 5. Consistent with the approach taken for other plants with digital control systems, loss of monitoring and control would be escalated to an Alert, as previously discussed for SA7 in response to Question 13.03-43 above. To further clarify this deviation, the EAL Table has been revised to state that "SU3, related to annunciator malfunctions, has been modified as presented in NEI 99-01, Rev. 5 to address the digital control systems in the US-APWR."

Initiating Condition CU2: Additional information regarding the technical basis for the deviation from the NEI 99-01, Rev. 5 version of CU2 is included in the attached "NEI 99-01 Rev. 5 Markup" with explanatory notes. This markup provides additional justification for the revision of the initiating condition. EAL CU2 has been added as a supplement to the EAL Table.

Initiating Condition HA1: Additional information for the justification has been included in the EAL Table. Specifically, for HA1, threshold 4, NEI 99-01, Rev. 5 states: "Turbine failure-generated PROJECTILES resulting in VISIBLE DAMAGE to a penetration of ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems." Due to the physical orientation of the turbine-generator (i.e., perpendicular to the plant), the US-APWR prevents the possibility of any turbine failure that could result in damage to safety systems (see DCD Subsection 3.5.1.3.2). The EAL Table has been revised to clarify this justification.

Initiating Conditions AU1 and AA1: EAL Thresholds #4 and #5 in NEI 99-01, Rev. 5, address plants with perimeter monitoring (#4) and/or automated dose assessment (#5). The EAL Table has been clarified to distinguish the differences between NEI 99-01, Rev. 5, and the CPNPP Units 3 & 4 EAL thresholds consistent with NEI 99-01, Rev. 5. Neither perimeter monitoring nor automatic real time dose assessment is installed at CPNPP Units 3 and 4. Therefore, Thresholds #4 and #5 do not apply and are not included.

Initiating Conditions AS1 and AG1: EAL Threshold #3 in NEI 99-01, Rev. 5, addresses plants with perimeter monitoring. The EAL Table has been clarified to indicate the difference between NEI 99-01, Rev. 5, and the CPNPP Units 3 & 4 EAL threshold consistent with NEI 99-01, Rev. 5. Perimeter monitoring is not installed at CPNPP Units 3 and 4. Therefore, Threshold #3 does not apply and is not included.

Initiating Condition HU1: NEI 99-01 EAL Threshold #5 addresses other site-specific phenomena (e.g., hurricane, flood or seiche) that can also be precursors of more serious events. No additional site-specific occurrences affecting the Protected Area were identified. This has been identified as a difference with NEI 99-01, Rev. 5 in order to document that the EAL threshold was considered but is not applicable to CPNPP Units 3 and 4.

Initiating Condition SU8: Luminant reconsidered removal of the phrase "on nuclear instrumentation" from the CPNPP Units 3 & 4 EAL and will retain the phrase. By retaining the phrase, there are no differences or deviations between the CPNPP Units 3 & 4 EAL and the NEI 99-01, Rev. 5 EAL. Therefore, the entry was removed from the EAL Table.

Emergency Director Note: Additionally, Luminant has re-evaluated its approach for CU2, AU1, AA1, AS1, and AG1. The note for the Emergency Director provided in NEI 99-01 will be retained. Accordingly, the EAL Table has been revised for each of these initiating conditions to delete the difference from NEI 99-01, Rev. 5 and insert: "Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time."

#### Attachment

NEI 99-01 Rev. 5 Markup for EAL CU2

#### Impact on R-COLA

See the marked-up CPNPP Units 3 & 4 Emergency Plan, Revision 3, pages provided in the response to Question 13.03-43 above.

Impact on S-COLA

This response is standard.

Impact on DCD

None.

## NEI 99-01 Rev. 5 Markup

**COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION****CU2****Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT**

UNPLANNED loss of RCS/RPV inventory.

**Comment [Luminant1]:** RPV is not used in the US-APWR DCD. US-APWR nomenclature is Reactor Vessel (RV).

**Operating Mode Applicability:** Refueling

**Example Emergency Action Levels:** (1 or 2)

**Note:** The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. UNPLANNED RCS/RPV level drop as indicated by ~~either of the following:~~

RCS/RPV water level drop below the RPV flange {site-specific Threshold Value} for 15 minutes or longer ~~when the RCS/RPV level band is established above the RPV flange.~~

~~RCS/RPV water level drop below the RCS level band for 15 minutes or longer when the RCS/RPV level band is established below the RPV flange.~~

**Comment [Luminant2]:** Planned RCS/RV level band will not be established below the RV flange for the US-APWR.

2. RCS/RPV level cannot be monitored with a loss of RCS/RPV inventory as indicated by an unexplained level rise in ~~{site-specific sump or tank}.~~ ANY one of the following:

- Refueling Water Storage Pit Level on L-1400, L-1401, L-1402, L-1403
- Containment Vessel Reactor Coolant Drain Tank (CVDt) Level on L-1000
- Pressurizer Relief Tank Level on L-560
- CCW Surge Tank (Train A & B) Level on L-1200 and L-1201 for Train A, L-1210 and L-1211 for Train B
- Containment Sump Level on L-1083

**Basis:**

This IC is a precursor of more serious conditions and considered to be a potential degradation of the level of safety of the plant.

Refueling evolutions that decrease RCS water level below the RPV flange are carefully planned and procedurally controlled. An UNPLANNED event that results in water level decreasing below the RPV flange, or below the planned RCS water level for the given evolution (if the planned RCS water level is already below the RPV flange), warrants declaration of a NOUE due to the reduced RCS inventory that is available to keep the core covered.



**COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION**

The allowance of 15 minutes was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame then it may indicate a more serious condition exists.

Continued loss of RCS Inventory will result in escalation to the Alert emergency classification level via either CA1 or CA4.

Note: The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling ~~modes~~ MODEs. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPV level and inventory are monitored by different means].

**EAL #1**

This EAL involves a decrease in RCS level below the top of the RPV flange that continues for 15 minutes due to an UNPLANNED event. This EAL is not applicable to decreases in flooded reactor cavity level, which is addressed by AU2 EAL1, until such time as the level decreases to the level of the vessel flange.

~~[For BWRs] if RPV level continues to decrease and reaches the Low-Low ECCS Actuation Setpoint then escalation to CA1 would be appropriate.~~

~~[For PWRs] If RPV level continues to decrease and reaches the Bottom ID Outlet Nozzle Bottom Inner Diameter (ID) of the RCS Loop then escalation to CA1 would be appropriate.~~

EAL Threshold #1: The value for RCS Level wide range (L-402) will be inserted when this information becomes available.

**EAL #2**

This EAL addresses conditions in the refueling ~~mode~~ MODE when normal means of core temperature indication and RCS level indication may not be available. Redundant means of RPV level indication ~~will normally be~~ is installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump and tank level changes. Sump and tank level increases must be evaluated against other potential sources of ~~leakage~~ LEAKAGE such as cooling water sources inside the containment to ensure they are indicative of RCS ~~leakage~~ LEAKAGE.

Escalation to the Alert emergency classification level would be via either CA1 or CA4.

**Comment [Luminant3]:** The US-APWR is a pressurized water reactor.

**Comment [Luminant4]:** Clarifies US-APWR design specific information for the operator.