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TXX-13081

Ref: 10 CFR 50.54(f)

April 30, 2013

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:** COMANCHE PEAK NUCLEAR POWER PLANT DOCKET NOS. 50-445 AND 50-446  
RESPONSE TO MARCH 12, 2012, REQUEST FOR INFORMATION PURSUANT TO  
TITLE 10 OF THE CODE OF FEDERAL REGULATIONS 50.54(F) REGARDING  
RECOMMENDATIONS OF THE NEAR-TERM TASK FORCE REVIEW OF INSIGHTS  
FROM THE FUKUSHIMA DAI-ICHI ACCIDENT, ENCLOSURE 5,  
RECOMMENDATION 9.3, EMERGENCY PREPAREDNESS - STAFFING, REQUESTED  
INFORMATION ITEMS 1, 2, AND 6 - PHASE 1 STAFFING ASSESSMENT

- REFERENCE:**
1. NRC Letter, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3 and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012
  2. Luminant Generation Company LLC's 60-Day Response, dated May 10, 2012, to NRC Letter Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012
  3. NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, dated May 2012
  4. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012

Dear Sir or Madam:

On March 12, 2012, the NRC staff issued a letter entitled Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3 and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident (Reference 1). Enclosure 5 of Reference 1 contains the specific Requested Actions, Requested Information, and Required Response

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associated with Recommendation 9.3 for Emergency Preparedness - Staffing. In accordance with 10 CFR 50.54, "Conditions of licenses," paragraph (f), addressees were requested to submit a written response to the information requests within 90 days.

In accordance with Reference 1, Enclosure 5, Luminant Generation Company LLC (Luminant) submitted an alternative course of action for performing the requested actions and providing the requested information (Reference 2). Attachment 1 of Reference 2 described the alternative course of action and schedule for responding to the Emergency Preparedness - Staffing, Requested Information Items 1, 2, and 6.

The enclosure to this letter provides the Units 1 and 2 Phase 1 Staffing Assessment Report. The Phase 1 Staffing Assessment Report follows the assessment process described in Reference 3.

In accordance with Reference 2, the enclosure to this letter provides the response to the following information requests:

- Reference 1, Enclosure 5, Staffing, Requested Information Item 1
- Reference 1, Enclosure 5, Staffing, Requested Information Item 2
- Reference 1, Enclosure 5, Staffing, Requested Information Item 6

A list of regulatory commitments contained in this letter is provided in the attachment to this letter.

Should you have any questions, please contact Dennis Buschbaum at (254) 897-5851 or [dennis.buschbaum@luminant.com](mailto:dennis.buschbaum@luminant.com).

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 30th day of April 2013.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By:   
Fred W. Madden  
Director, Oversight & Regulatory Affairs

Attachment - List of Regulatory Commitments

COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2  
Enclosure - PHASE 1 ON-SHIFT STAFFING ASSESSMENT

c - A. T. Howell, Region IV  
B. K. Singal, NRR  
Resident Inspectors, Comanche Peak

List of Regulatory Commitments

This communication contains the following enhancements which will be entered into the CPNPP Commitment Tracking System and completed or incorporated into the licensing basis as noted:

<u>Number</u>	<u>Commitment</u>	<u>Due Date/Event</u>
4630659	Integrate the expanded response capability into existing augmented Emergency Response Organization (ERO) processes (i.e., the ability to transition from a single-unit to a multi-unit expanded response capability).	10/31/2014
4630672	Develop plans/procedures that address the use of expanded response capability in the on-site/near-site primary and alternate emergency response facilities (e.g., OSC and TSC) for declared emergency events that involve more than one-unit at multi-unit sites. This should include the relocation of expanded response capability to the alternate emergency response facility, should the primary emergency response facility be rendered inoperable.	10/31/2014
4630681	Identify and Integrate into the ERO notification/activation protocol those non-ERO response personnel (e.g., Operations and Maintenance) necessary to support expanded response capability functions.	12/31/2013

The Commitment number is used by Luminant Power for the internal tracking of CPNPP commitments

**ENCLOSURE TO TXX-13081  
COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2  
PHASE 1 ON-SHIFT STAFFING ASSESSMENT**

## Table of Contents

1	Introduction .....	3
2	Staffing Analysis Process Overview .....	3
	2.1 On-Shift Staffing Analysis Process.....	3
	2.2 Expanded ERO Analysis Process .....	3
3	NEI 12-01 Phase 1 Analysis Summary.....	4
	3.1 Enhancements Identified.....	4
4	Assumptions .....	4
	4.1 NEI 12-01 - Assumptions for Staffing Analysis.....	4
	4.2 NEI 10-05 - Applicable Assumptions.....	6
	4.3 Plant Specific Assumptions.....	7
5	On-Shift Staffing Analysis.....	8
	5.1 On-Shift Staffing Analysis.....	8
	5.2 On-Shift Staffing Analysis Summary.....	12
6	Expanded ERO Response Analysis.....	12
	6.1 Expanded ERO Response Analysis Details .....	12
	6.2 Expanded ERO Response Analysis Summary .....	14
7	Program Controls .....	17
	7.1 Emergency Response Drills & Exercise Program.....	17
	7.2 Training.....	17
	7.3 Implementing Guidance.....	17
	7.4 Onsite Staff Ability to Move Back-up Equipment .....	17
8	Security Consideration .....	18
9	Implementation Schedule – Regulatory Commitments.....	18
10	References.....	19
11	Attachment 1 – Staffing Assessment Tables.....	21

## 1. Introduction

This report provides the staffing assessment for Comanche Peak Nuclear Power Plant (CPNPP) Units 1 and 2 to comply with the: 1) U.S. Nuclear Regulatory Commissions (NRC) request issued in Reference 1, Enclosure 5 and 2) approach endorsed by the NRC in Reference 2. The CPNPP Units 1 and 2 Phase 1 staffing assessment is in accordance with the guidance provided in Interim Staff Guidance NSIR/DPR ISG-01, Nuclear Energy Institute (NEI) 10-05, and NEI 12-01 (References 17, 18, and 19, respectively). CPNPP is providing the Phase 1 information to address Request Numbers 1, 2, and 6 of Reference 20.

CPNPP assessed the current Units 1 and 2 staffing levels to determine the appropriate staff to fill the positions required to respond to a dual-unit, Beyond Design Basis External Event (BDBEE), that results in an extended loss of alternating current (AC) power (i.e., extended Station Blackout (SBO)) and impeded access to the units. The assessment establishes the minimum number of personnel and the specific composition of the response staff required to implement existing mitigation strategies and repair actions intended to maintain or restore the functions of core cooling, containment, and spent fuel pool cooling for both units. This Phase 1 staffing assessment considered applicable actions from the SBO coping strategies in place at CPNPP at the time of the assessment.

## 2. Staffing Analysis Process Overview

### 2.1 On-Shift Staffing Analysis Process

The Comanche Peak Phase 1 On-Shift Staffing Analysis (OSA) was conducted in accordance with NEI 12-01 and NEI 10-5. The On-Shift Staffing Analysis was performed by a multi-disciplined team using site procedures to analyze the performance of tasks by the minimum on-shift staff as designated in the Emergency Plan. Task areas analyzed include:

- Event Mitigation (Emergency Operating Procedures (EOP), Abnormal Operating Procedures (ABN), other site procedures)
- Station Blackout Procedures (EOP and ABN)
- Radiation Protection (RP) and Chemistry Technician Functions (as specified in site response procedures)
- Emergency Preparedness Functions (NUREG-0654 Table B-1/ISG -01)

Existing strategies for responding to an extended loss of AC power (Station Blackout) affecting all onsite units were evaluated in the On-Shift Staffing Analysis. The staffing analysis addressed the ability of the on-shift staff to perform any required emergency response functions that would be degraded or lost prior to the delayed arrival of additional Emergency Response Organization (ERO) personnel.

To conduct the assessment, a team of subject matter experts representing Comanche Peak Operations, Radiation Protection, Chemistry, and Security as well as Emergency Preparedness met with consultants in a tabletop exercise in February 2013. The participants reviewed the assumptions and applied existing procedural guidance in coping with a BDBEE using minimum On-Shift Staffing. Particular attention was given to the sequence and timing of each procedural step, its duration, and the position performing it.

### 2.2 Expanded ERO Analysis Process

The expanded ERO analysis was conducted in accordance with NEI 12-01. NEI 12-01 provided recommended staffing considerations for the postulated event to enable the performance of unit

specific accident analysis and mitigation functions. The capability of the current ERO staffing at Comanche Peak to perform these expanded ERO functions was assessed.

### 3. NEI 12-01 Phase 1 Analysis Summary

No conflicts, deficiencies, or overlaps in functions or tasks required to be performed by on-shift operations and support personnel were identified during the initial 6-hour period. No Transition Phase actions were required within the first six hours of the event.

Using NEI 12-01 guidance, the minimum On-Shift Staff as defined in Staffing Table 1, CPNPP Emergency Plan, performed all actions required by operating and Emergency Plan procedures in the initial 6-hour period, relying only on installed structures, systems, and components available in the Initial Phase of the response. Plant conditions did not require any other equipment to be used.

Using existing procedures and strategies, the site was able to respond to the event utilizing installed plant equipment and the minimum On-Shift Staffing complement.

There were no unanalyzed tasks that required a time motion study.

#### 3.1 Enhancements Identified

Three enhancements are planned as a result of the assessment;

1. Integrate the expanded response capability into existing augmented Emergency Response Organization (ERO) processes (i.e., the ability to transition from a single-unit to a multi-unit expanded response capability).
2. Develop plans/procedures that address the use of expanded response capability in the onsite/near-site primary and alternate emergency response facilities (e.g., OSC and TSC) for declared emergency events that involve more than one-unit at multi-unit sites. This should include the relocation of expanded response capability to the alternate emergency response facility, should the primary emergency response facility be rendered inoperable.
3. Identify and integrate into the ERO notification/activation protocol those non-ERO response personnel (e.g., Operations and Maintenance) necessary to support expanded response capability functions.

### 4. Assumptions

#### 4.1 NEI 12-01 – Assumptions for Staffing Analysis

NEI 12-01 establishes a set of standard assumptions that have been used in the development of this report.

1. A large-scale external event occurs that results in:
  - all onsite units affected
  - extended loss of AC power
  - impeded access to the units
2. Initially, all onsite reactors are operating at full power and are successfully shut down.



3. A Hostile Action directed at the affected site does not occur during the period that the site is responding to the event.
4. The event impedes site access as follows:
  - A. Post event time: 6 hours – No site access. This duration reflects the time necessary to clear roadway obstructions, use different travel routes, mobilize alternate transportation capabilities (e.g., private resource providers or public sector support), etc.
  - B. Post event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation capabilities (e.g., private resource providers or public sector support).
  - C. Post event time: 24+ hours – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies, and large numbers of personnel.

Each licensee should identify transportation and site access-enhancing methods in accordance with Section 3.9 of NEI 12-01, and include this information in the response to Staffing Information Request #4. The Information Request #4 response should also include an overview discussion of how the identified methods will be implemented following a beyond design basis external event.

A staffing assessment may utilize a “no site access” end time of less than 6 hours and greater than or equal to 4 hours, if supported by a documented basis. This basis should include a discussion of the site-specific transportation-related resources and capabilities, and related supporting arrangements, which provide assurance that augmented staff would be available on the site starting at the time used in the assessment. These resources and capabilities could be provided by Company-internal, private or public sources (including vehicles and aircraft, such as helicopters from military and National Guard organizations). All arrangements with the anticipated service providers should be documented (e.g., Letter of Agreement, contract, etc.).

A staffing assessment may not utilize a “no site access” end time of less than 4 hours.

5. On-shift personnel are limited to the minimum complement allowed by the site Emergency Plan (i.e., the minimum required number for each required position). This would typically be the on-shift complement present during a backshift, weekend, or holiday.
6. The Phase 1 staffing assessment (for licensee Action #6 of Table 1.1) should consider the applicable actions from the Station Blackout (SBO) coping strategies in place at the time of the assessment. Such actions may include the shedding of non-essential battery loads, use of portable generators or batteries, opening room and cabinet doors, water/coolant conservation or makeup using portable equipment, etc. These actions do not include those associated with cross-tying AC power sources or electrical distribution buses between units since, as stated in assumption number 2.2.1, all onsite units are experiencing an extended loss of AC power.

Following the accident at Fukushima Daiichi, the Institute of Nuclear Power Operations (INPO) issued three Event Reports (referred to IERs) requiring the assessment and implementation of a range of actions intended to improve the capabilities for responding to a beyond design basis event and an extended loss of AC power, including events that impact the cooling of spent fuel. The staffing assessments performed in response to the NRC letter should include consideration

of those IER improvement actions already implemented at the time of the assessment (e.g., incorporated into plant procedures).

Sites with existing strategies for responding to an extended loss of AC power affecting all onsite units should consider those actions in their Phase 1 staffing assessment.

#### 4.2 NEI 10-05 – Applicable Assumptions

NEI 10-05 establishes a set of standard assumptions that have been used in the development of this report.

The following assumptions and limitations are applicable to the OSA.

1. On-shift personnel can report to their assigned response locations within the timeframes sufficient to allow for performance of assigned actions.
2. The On-Shift Staff possesses the necessary Radiation Worker qualifications to obtain normal dosimetry and to enter Radiologically Controlled Areas (but not high, locked high or very high radiation areas) without the aid of a Radiation Protection Technician.
3. It is assumed that personnel assigned to the major response area of Plant Operations and Safe Shutdown meet the requirements and guidance established by NRC regulations and are able to satisfactorily perform the functions and tasks necessary to achieve and maintain safe shutdown. Staff performance within this area is not evaluated as part of this assessment, unless a role/function/task from another major response area is assigned as a collateral duty.
4. Onsite security organization: Performance of this function is regularly analyzed through other station programs and will not be evaluated here, unless a role or function from another major response area is assigned as a collateral duty.
5. Individuals holding the position of Radiation Protection Technician or Chemistry Technician are qualified to perform the range of tasks expected of their position.
6. The task of making a simple and brief communication has minimal impact on the ability to perform other assigned functions/tasks, and is therefore an acceptable collateral duty for all positions. Examples include making a plant page announcement or placing a call for assistance to an offsite resource such as local law enforcement. This assumption does not apply to emergency notification to an Offsite Response Organization (ORO) or the NRC.
7. The task of performing a peer check has minimal impact on the ability to perform other assigned functions/tasks, and is therefore an acceptable collateral duty for all positions. Examples include performing a peer check on a recommended emergency classification or notification form for transmittal to offsite authorities.
8. The analyzed events occur during off-normal work hours at a time when augmented ERO responders are not at the site (e.g., during a backshift, weekend or holiday). For purposes of this analysis, and consistent with NEI 12-01 - Assumption 4, 360 minutes (6 hours) will be used as the time period for the conduct of on-shift ERO response actions.

#### 4.3 Plant Specific assumptions

NEI 12-01 defines the following phases for response to the BDBEE:

**Initial Phase** - Implementation of strategies that generally rely upon installed plant equipment.

**Transition Phase** - Implementation of strategies that involve the use of portable equipment and consumables to extend the coping period, and maintain or restore the functions of core cooling, containment, and spent fuel pool cooling.

For purposes of assessing augmented staffing, it is assumed that the on-shift staff successfully performs all Initial Phase coping actions. No Transition Phase actions involving the use of portable equipment are required in the first six hours, based on plant conditions.

No longer term Transition Phase actions were evaluated because none were established at the time of this assessment. The Transition Phase will be addressed in the Phase 2 staffing assessment.

5. On-Shift Staffing Analysis

5.1 On-Shift Staffing Analysis

The On-Shift Staffing requirements for Comanche Peak Units 1 & 2 are listed in the table below. The methodology of NEI 12-01 requires that only personnel required to be on-shift complement (shown below) can be credited in the staffing analysis.

Position		Emergency Plan
Shift Manager	SM	1
Unit Supervisor	US	1
Shift Technical Advisor	STA	1
Reactor Operator	RO	2
Nuclear Equipment Operator	NEO	4
Chemistry Technician	CHEM	2
Radiation Protection Technician	RP	2
<u>Prompt Team Members</u>		
Mechanic	MM	1
Electrician	EM	1
I&C Technician	IC	1
Emergency Communicator I&C Technician #2	IC	1
Security Personnel	SEC	Per Security Plan

This event assumes a loss of offsite power combined with a failure of the emergency diesel generators to load. All remaining power is supplied by the station batteries. The loss of AC power to emergency buses initially results in the declaration of a Site Area Emergency (EAL SS4.1). When it becomes apparent that power will be unavailable for a prolonged period, the event classification is escalated to a General Emergency (EAL SG1.1).

Table 5.1 designates each member of the minimum shift complement with a brief description of duties.

**Table 5.1  
On-Shift Positions**

On-Shift Position	Duties
SM	Overall command of both units Emergency Plan implementation
US	Unit 1 supervision
STA	Unit 2 supervision
RO #1	Manipulation of Unit 1 controls
RO #2	Manipulation of Unit 2 controls
NEO #1	Perform local equipment manipulations as needed
NEO #2	Perform local equipment manipulations as needed
NEO #3	Perform local equipment manipulations as needed
NEO #4	Perform local equipment manipulations as needed
Chem #1	Perform local equipment manipulations as needed
Chem #2	Perform local equipment manipulations as needed
RP #1	Conducts radiological monitoring as needed
RP #2	Conducts radiological monitoring as needed
MM	Perform local equipment manipulations as needed
EM	Perform local equipment manipulations as needed
IC #1	Perform local equipment manipulations as needed
IC #2	Emergency Communicator

ECA-0.0 A/B (Unit 1 & 2 "Loss of All AC Power" procedures) are the governing procedures for this event which involves loss of all onsite and offsite AC power with the exception of that provided from the station batteries. Battery life to support instrumentation, with load shedding as prescribed in ECA 0.0, is 24 hours. Valve and breaker operation must be performed locally by Nuclear Equipment Operators (NEO).

The strategy employed in this event is to establish core cooling by natural circulation and to perform a plant cooldown using the steam-driven auxiliary feedwater pump. Manual local control is required of the steam generator relief valves to control the cooldown. Because no condenser vacuum exists due to the loss of AC power, heat removal from the steam generators is achieved by venting steam directly to the atmosphere thereby continually depleting the feedwater supply. The seismically qualified condensate storage tank (CST) volume is sufficient for at least 13 hours without replenishment.

Table 5.2 provides a timeline of each position during the event. Table 5.2 lists the major activities by position in 15-minute increments for the first six hours of the event. Table 5.2 shows that no overlap occurs in assigning actions to the on-shift staff. Adequate staffing is in place to allow each position to complete an assigned task before assuming another one.

Each on-shift position from Emergency Plan minimum Staffing Table 1 was entered in Table 1 of Attachment 1. For position titles with more than one position holder, a unique sequential number was assigned to each position (e.g., RO #1, RO #2 etc). The site Emergency Plan reference that describes the requirement for the position to be on-shift was then entered into column 3 of Table 1 of Attachment 1. Using only the on-shift positions entered in Table 1 of Attachment 1, the remaining Attachment 1 tables were completed by entering the shift position that fills a described role, or performs a specific function or tasks:

- Table 2 – Plant Operations & Safe Shutdown - Two Units - Two Control Rooms
- Table 3 – Firefighting (not applicable for this event analysis)
- Table 4 – Radiation Protection & Chemistry Time Line of Activities
- Table 5 – Emergency Plan Implementation

Following completion of each of the above tables, each on-shift position assigned to the associated table was located on Attachment 1, Table 1. For each position, the table number and associated line number was then entered in column 4, "Role in Table# /Line#." If the associated task required compensatory actions, a YES was placed in the last column and the compensatory action recorded in the results section of this report.

In addition to the operational activities listed, other members of the On-Shift Staff are engaged in Emergency Plan implementation activities as shown in Table 5 of Attachment 1. While the initial emergency declaration is a Site Area Emergency, the scenario assumes that the Shift Manager is informed at T= 60 that offsite power will be unavailable for an extended period. That notification prompts the declaration of a General Emergency at T= 61.

Table 5.2  
Summary of On-Shift Staff Actions

Action in progress	Event Time (hrs.)																							
	0				1				2				3				4				5			
Position	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60
<b>Shift Manager</b>																								
Emergency Plan implementation																								
<b>Unit Supervisor #1</b>																								
Unit 1 supervision																								
<b>Shift Technical Advisor</b>																								
Unit 2 supervision																								
<b>Reactor Operator #1</b>																								
ECA-0.0 A performance																								
<b>Reactor Operator #2</b>																								
ECA-0.0 B performance																								
<b>Nuclear Equipment Operator #1</b>																								
Attempt local start of emergency diesels																								
Auxiliary Feedwater Control																								
Establish Local Control of SG atmospherics																								
Monitor SFP Level																								
Alternate Power Generator Breaker Alignment																								
<b>Nuclear Equipment Operator #2</b>																								
Attempt local start of emergency diesels																								
Auxiliary Feedwater Control																								
Establish Local Control of SG atmospherics																								
Alternate Power Generator Breaker Alignment																								
<b>Nuclear Equipment Operator #3</b>																								
Isolate RCP Seals																								
CST Isolation																								
Attempt start Alternate Power Generator																								
Local Control of SG atmospherics																								
<b>Nuclear Equipment Operator #4</b>																								
Isolate RCP Seals																								
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Table 5.2  
Summary of On-Shift Staff Actions

Action in progress	Event Time (hrs.)																								
	0				1				2				3				4				5				
Position	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	0-15	15-30	30-45	45-60	
<b>Radiation Protection Tech #1</b>																									
Access Control																									
<b>Radiation Protection Tech #2</b>																									
Available for job coverage																									
<b>Chemistry Technician #1</b>																									
Establish Local Control of Auxiliary Feedwater																									
Establish Local control of SG Atmospherics																									
<b>Chemistry Technician #2</b>																									
Establish Local Control of Auxiliary Feedwater																									
Establish Local control of SG Atmospherics																									
<b>Mechanical Maintenance #1</b>																									
Establish Local control of SG Atmospherics																									
<b>Electrical Maintenance #1</b>																									
Direct Current (DC) Load Shed																									
<b>I&amp;C Technician #1</b>																									
DC Load Shed																									
<b>I&amp;C Technician #2</b>																									
CR Communicator																									

## 5.2 On-Shift Staffing Analysis Summary

Using existing procedures and strategies, the minimum On-Shift Staff as defined in the Emergency Plan, shown on Table 5.1, was able to cope by relying on installed plant equipment and the minimum On-Shift Staffing complement.

No conflicts, deficiencies, or overlaps in functions or tasks required to be performed by on-shift operations and support personnel were identified during the initial 6-hour period. No Transition Phase actions were required within the first six hours of the event.

The minimum On-Shift Staff performed all actions required by operating and Emergency Plan procedures in the 6-hour period, relying only on installed structures, systems and components available in the Initial Phase of the response. Plant conditions did not require any other equipment to be used.

## 6. Expanded ERO Response Analysis

### 6.1 Expanded ERO Response Analysis Details

The augmented ERO for a multi-unit site such as Comanche Peak would be challenged to effectively respond to a beyond design basis external event that resulted in an extended loss of AC power affecting more than one unit. In an event of this magnitude, it would be necessary to "expand" the capability of the augmented ERO in order to facilitate timely and effective performance of critical emergency response functions. The focus of this "expanded response capability" at Comanche Peak would be to enable the performance of unit-specific accident assessment and mitigation functions across multiple units.

The generic assumptions of NEI 12-01 stipulate that site access is unavailable for six hours post-event, thereby limiting all response and mitigation actions to the capability of the On-Shift Staff. After six hours, a significant portion of the augmented ERO is assumed to have arrived onsite. Because Comanche Peak employs an "all-call, all-come" approach to ERO response in that all ERO members are expected to respond upon notification, sufficient personnel will be available to meet the immediate needs of the station with additional personnel designated as relief.

Table 3.1 of NEI 12-01 lists the recommended complement and staffing considerations for each expanded ERO position. Table 6.1 below replicates the substance of that table and includes information specific to Comanche Peak.



**Table 6.1  
Expanded Response Functions for Phase 1 Staffing Assessment**

Expanded Response Function	Location	Key Roles and Staffing Considerations	ERO Members Available	Remarks
Unit Response Coordination	TSC	<ul style="list-style-type: none"> <li>Overall cognizance of the activities related to implementation of repair and corrective actions and implementation of Transition Phase coping and Severe Accident management (SAM) strategies for an assigned unit.</li> <li>One individual per unit; individuals should not be assigned other functions.</li> </ul>	TSC Manager	4 trained and qualified individuals available
Operations Coordination	TSC	<ul style="list-style-type: none"> <li>Provides coordination of Operations staff and support for an assigned unit.</li> <li>One individual per unit; individuals should not be assigned other functions.</li> </ul>	TSC Ops Coordinator	4 trained and qualified individuals available
Maintenance Coordination	OSC	<ul style="list-style-type: none"> <li>Provides coordination of Maintenance staff and support for an assigned unit.</li> <li>One individual per unit; individuals should not be assigned other functions.</li> </ul>	OSC Manager	4 trained and qualified individuals available
Engineering Coordination	TSC	<ul style="list-style-type: none"> <li>Provides coordination of Engineering staff and support for an assigned unit.</li> <li>One individual per unit; individuals should not be assigned other functions.</li> </ul>	TSC Engineering Coordinators	8 trained and qualified individuals available
Engineering Assessments	TSC	<ul style="list-style-type: none"> <li>One team for each unit to perform engineering assessments in support of repair and corrective actions.</li> <li>Team composition (i.e., number and represented disciplines) as described in the Emergency Plan.</li> <li>Team may include personnel responsible for performing other functions for the same assigned unit.</li> </ul>	TSC Engineering Teams	Trained and qualified individuals available as follows;  Mechanical – 8 Electrical – 8 I&C – 8
Evaluation of Severe Accident Management (SAM) Strategies	TSC	<ul style="list-style-type: none"> <li>One team for each unit to evaluate selection of SAM strategies; team performs evaluations not done by Control Room personnel.</li> <li>Team composition (i.e., number and represented disciplines) as described in governing site programs, procedures, and guidelines.</li> <li>Team may include personnel responsible for performing other functions for the same assigned unit.</li> </ul>	TSC Eng. Team consisting of the following members; SAMG Eng., Ops Eng., Analysis Eng., Rx Eng.	Trained and qualified individuals available as follows;  SAMG Eng. – 4 OPS Eng. – 4 Analysis Eng. – 8 RX Eng. – 5
Unit In-Plant Team Coordination	OSC	<ul style="list-style-type: none"> <li>Overall cognizance of onsite and in-plant teams performing or supporting repair and corrective actions for an assigned unit.</li> <li>One individual per unit; individuals should not be assigned other functions.</li> </ul>	OSC ERDC Team Coordinators	10 trained and qualified individuals available
Non-Licensed Operators (NEOs)	OSC	<ul style="list-style-type: none"> <li>Two individuals per unit to assist with implementation of repair and corrective actions.</li> <li>Should not include members of the On-Shift Staff.</li> </ul>	NEO's	39 trained and qualified individuals available

**Table 6.1  
Expanded Response Functions for Phase 1 Staffing Assessment**

Expanded Response Function	Location	Key Roles and Staffing Considerations	ERO Members Available	Remarks
Mechanical Maintenance Repair and Corrective Action	OSC	<ul style="list-style-type: none"> <li>Two individuals per unit to implement repair and corrective actions.</li> <li>Staffing may include an on-shift individual (i.e., 2 individuals for a unit composed of 1 on-shift and 1 augmented).</li> </ul>	OSC MM	34 trained and qualified individuals available
Electrical Maintenance Repair and Corrective Action	OSC	<ul style="list-style-type: none"> <li>Two individuals per unit to implement repair and corrective actions.</li> <li>Staffing may include an on-shift individual (i.e., 2 individuals for a unit composed of 1 on-shift and 1 augmented).</li> </ul>	OSC EM	23 trained and qualified individuals available
I&C Repair and Corrective Action	OSC	<ul style="list-style-type: none"> <li>Two individuals per unit to implement repair and corrective actions.</li> <li>Staffing may include an on-shift individual (i.e., 2 individuals for a unit composed of 1 on-shift and 1 augmented).</li> </ul>	OSC IC	16 trained and qualified individuals available
Implementation of SAM Strategies	OSC	<ul style="list-style-type: none"> <li>Number and composition of personnel capable of simultaneous implementation of any 2 SAM strategies at each unit.</li> <li>Should not include personnel assigned to other functions (e.g., emergency repair and corrective actions); however, may include members of the On-Shift Staff and personnel responsible for Transition Phase coping strategies.</li> </ul>	See separate SAMG strategy analysis below	

Review of the Comanche Peak ERO roster indicates that there are sufficient numbers of experienced and qualified individuals to fill the positions in Table 6.1 with adequate depth to staff at least two 12-hour shifts.

The following enhancement is planned:

Identify and integrate into the ERO notification/activation protocol those non-ERO response personnel (e.g., Operations and Maintenance) necessary to support expanded response capability functions.

## 6.2 Expanded ERO Response Analysis Summary

### Expanded ERO – RP Coverage

NEI 12-01 also recommends that each station have a sufficient number of Radiation Protection Technicians (RP's) to support Emergency Plan functions and expanded response capability following a BDBEE. That number is determined by the following formula:

$$RPT_T = RPT_{COP} + RPT_{RCA} + RPT_{NC}$$

Where:

$RPT_T$  = Total required number of onsite RPTs

$RPT_{COP}$  = Number needed to support implementation of any 2 extended loss of AC power coping strategies per unit.

$RPT_{RCA}$  = Number needed for repair and corrective action (2 times the number of units)

$RPT_{NC}$  = Number of onsite RPTs performing other Emergency Plan functions that would preclude them from performing job coverage for extended loss of AC power coping, repair, or corrective action teams.

For Comanche Peak, the resulting number of RPTs is:

<u>RPT Category</u>	<u>Number Required</u>	<u>Comments</u>
$RPT_{COP}$	1*	Staffing assessment results indicate that normal support of RP Technicians to provide access point monitoring for operations personnel to perform their assigned actions. CPNPP has one access point for Units 1 and 2.
$RPT_{RCA}$	4	2 technicians x 2 units
$RPT_{NC}$	2*	Offsite Radiological Assessments
$RPT_T$	7*	

\* Note this number applies to Initial Phase actions only. Transition Phase actions will be determined in the Phase 2 assessment.

Following a beyond design basis external event, RP Technicians are available to support performance of assigned Emergency Plan functions and the expanded response capability. In the event of fuel damage, prevailing dose rates would likely require that the site's RP Technician complement be augmented with technicians from outside sources. The Comanche Peak ERO has a sufficient number of RPTs to perform these functions for two continuing 12-hour shifts. If needed, additional resources can be obtained through agreements in place with Chicago Bridge and Iron for maintenance and radiation protection personnel.

Work Location for the Expanded ERO

If access to designated emergency response facilities is not possible, ERO members are trained to report to the alternate location.

The following enhancement is planned:

Develop plans/procedures that address the use of expanded response capability in the onsite/near-site primary and alternate emergency response facilities (e.g., OSC and TSC) for declared emergency events that involve more than one-unit at multi-unit sites. This should include the relocation of expanded response capability to the alternate emergency response facility, should the primary emergency response facility be rendered inoperable.

Administrative Support Personnel

A limited number of administrative personnel are designated as part of the ERO. Other administrative support personnel who assist the augmented ERO members are not assigned critical response tasks. Augmented ERO personnel are capable of performing their assigned tasks and responsibilities without requiring administrative support other than what is provided as part of the existing ERO.

SAMG Implementations

The assessment considered the number and qualifications of SAMG implementers required for simultaneous implementation of the two most intensive SAMG strategies on both units.

The assessment considered the number and qualifications of SAMG implementation personnel required for simultaneous implementation of the two most task intensive SAMG strategies on both units. Two strategies were evaluated:

- Control Containment Conditions SAG-6
- Flood Containment SAG-8

Implementation of the Control Containment Conditions SAG-6 strategy requires the following resources.

Resource	Number per unit	Function
NEOs	2	Implement EDMG A.4-1 for Refueling Water Storage Tank (RWST) Makeup as needed
NEOs	2 + 1 common for Fire protection water source	Implement EDMG A.4.7 for Portable Spray if Containment is breached
RP Technician	1	Monitor Dose rates

Implementation of the Flood Containment SAG-8 Strategy requires the following resources.

Resource	Number per Unit	Function
NEOs	2	Implement EDMG A.4-1 for Refueling Water Storage Tank RWST Makeup as needed
NEOs	2	Implement EDMG A.4-6 Containment Flooding with Portable Pump
Mechanic (MM)	2	Removing blank flange from Containment spray line for EDMG A.4-6 Containment flooding with Portable Pump
RP Technician	1	Monitor Dose rates

Implementation of strategies SAG-6 and SAG-8 simultaneously would require the following personnel resources:

- 17 Nuclear Equipment Operators
- 4 OSC Mechanics
- 4 RP Technicians

## 7. Program Controls

### 7.1 Emergency Response Drills & Exercise Program

NEI 12-01, states that a licensee should determine if any changes are necessary to documents describing the emergency response drill and exercise program. In particular, standard objectives and extent-of-play may need to be revised to clarify the expected demonstration of functions that are dependent upon the type of scenario event or accident (i.e., within or beyond design basis, and number of affected units). For example, functions associated with an expanded response capability would not be demonstrated during a drill or exercise that involved a design basis accident affecting only one unit.

Current CPNPP drill and exercise procedures do not include evaluation objectives or demonstration criteria for dual unit events or expanded ERO activities. As future guidance is expected from the NRC in this area, no changes are planned to the drill and exercise procedures at this time.

### 7.2 Training

No new ERO tasks or functions have been identified to implement the expanded response capability. CPNPP has a sufficient number of qualified ERO personnel to implement the expanded response; qualification of additional personnel will not be required.

### 7.3 Implementation Guidance

The following enhancement is planned:

Integrate the expanded response capability into existing augmented Emergency Response Organization (ERO) processes (i.e., the ability to transition from a single-unit to a multi-unit expanded response capability).

### 7.4 Onsite Staff Ability to Move Back-up Equipment

US Nuclear Regulatory Commission (NRC) letter, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012 REQUESTED INFORMATION states in part.

The following function is requested to be assessed:

How onsite staff will move back-up equipment (e.g., pumps, generators) from alternate onsite storage facilities to repair locations at each reactor as described in the Order regarding the NTIF Recommendation 4.2. It is requested that consideration be given to the major functional areas of NUREG-0654, Table 8-1, such as plant operations and assessment of operational aspects, emergency direction and control,

notification/communication, radiological accident assessment, and support of operational accident assessment, as appropriate.

Response to "How onsite staff will move back-up equipment (e.g., pumps, generators) from alternate onsite storage facilities to repair locations at each reactor" will be provided in the Phase 2 staffing analysis.

8. Security Considerations

Existing coping strategies do not anticipate the use of Security Officers to perform duties unrelated to their assigned roles. Security Officers will perform functions within their current roles such as monitoring and controlling site access and providing compensating measures for any vital area doors that may need to remain open to facilitate room environmental conditions.

9. Implementation Schedule – Regulatory Commitments

The following table identifies the regulatory commitments in this document. Any other statements in this submittal represent intended or planned actions and are not considered to be regulatory commitments.

COMMITMENT	COMMITMENT NUMBER	SCHEDULED COMPLETION DATE
Integrate the expanded response capability into existing augmented Emergency Response Organization (ERO) processes (i.e., the ability to transition from a single-unit to a multi-unit expanded response capability).	4630659	10/31/2014
Develop plans/procedures that address the use of expanded response capability in the onsite/near-site primary and alternate emergency response facilities (e.g., OSC and TSC) for declared emergency events that involve more than one-unit at multi-unit sites. This should include the relocation of expanded response capability to the alternate emergency response facility, should the primary emergency response facility be rendered inoperable.	4630672	10/31/2014
Identify and Integrate into the ERO notification/activation protocol those non-ERO response personnel (e.g., Operations and Maintenance) necessary to support expanded response capability functions.	4630681	12/31/2013

10. References

1. Letter from E. J. Leeds (NRC) and M. R. Johnson (NRC) , to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, dated March 12, 2012, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident"
2. Letter from D. L. Skeen (NRR) to Susan Perkins-Grew (NEI) dated May 15, 2012, U.S. Nuclear Regulatory Commission Review of NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, May 2012
3. EOP-0.0A/B, "Reactor Trip Or Safety Injection," Revision 8
4. ABN-601A/B, "Response To A 138/345KV System Malfunction," Revision 11
5. ABN-602 "Response To A 6900/480 Volt System Malfunction," Revision 8
6. ECA-0.0A/B, "Loss Of All AC Power," Revision 6
7. ECA-0.0A/B, "Loss Of All AC Power," Revision 4
8. ECA-TP-11-001A/B, "Loss Of All AC Power Recovery Without SI and with APG," Revision 1
9. SOP-614A/B, "Alternate Power Generator Operation," Revision 12
10. SAG-6, "Severe Accident Management Guidance – Control Containment Conditions," Revision 2
11. SAG-8, "Severe Accident Management Guidance – Flood Containment," Revision 2
12. EPP-201, "Assessment Of Emergency Action Levels Emergency Classification And Plan Activation," Revision 12
13. EPP-303, "Operation of Computer Based, Emergency Dose Assessment System," Revision 13
14. EPP-304, "Protective Action Recommendations," Revision 13
15. EPP-314, "Evacuation and Accountability," Revision 9
16. Letter from Luminant to Nuclear Regulatory Commission, "Comanche Peak Nuclear Power Plant, Docket Nos. 50-445 and 50-446, 90-Day Response to March 12, 2012 Information Request Regarding Recommendation 9.3 of the Near-Term Task Force," dated June 7, 2012
17. NSIR/DPR ISG-01, "Interim Staff Guidance Emergency Planning for Nuclear Power Plants," Revision 0, November 2011

18. NEI 10-05, Revision 0, June 2011, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities"
19. NEI 12-01, Revision 0, May 2012, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities"
20. Luminant Generation Company, LLC's 60-Day Response, dated May 10, 2012, to NRC Letter "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012



**ATTACHMENT 1**  
**STAFFING ASSESSMENT TABLES**

**Attachment 1  
Staffing Assessment Tables**

**TABLE 1 – On-shift Positions**

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1	Shift Manager	CPNPP Emergency Plan Table 1.1	N/A	T2/L1 T5/L1 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10 T5/L16 T5/L17 T5/L18 T5/L19	No	No
2	Unit Supervisor	CPNPP Emergency Plan Table 1.1	N/A	T2/L2	No	No
3	Shift Technical Advisor (STA)	CPNPP Emergency Plan Table 1.1	N/A	T2/L3	No	No
4	Reactor Operator #1	CPNPP Emergency Plan Table 1.1	N/A	T2/L4	No	No
5	Reactor Operator #2	CPNPP Emergency Plan Table 1.1	N/A	T2/L5	No	No
6	Station Operator #1	CPNPP Emergency Plan Table 1.1	N/A	T2/L6	No	No
7	Station Operator #2	CPNPP Emergency Plan Table 1.1	N/A	T2/L7	No	No
8	Station Operator #3	CPNPP Emergency Plan Table 1.1	N/A	T2/L8	No	No
9	Station Operator #4	CPNPP Emergency Plan Table 1.1	N/A	T2/L9	No	No
10	Chem Technician #1	CPNPP Emergency Plan Table 1.1	N/A	T2/L10 T4/L3	No	No
11	Chem Technician #2	CPNPP Emergency Plan Table 1.1	N/A	T2/L11 T4/L4	No	No
12	RP Technician #1	CPNPP Emergency Plan Table 1.1	N/A	T2/L12 T4/L1	No	No
13	RP Technician #2	CPNPP Emergency Plan Table 1.1	N/A	T2/L13 T4/L2	No	No
14	Communicator (I&C Technician #2)	CPNPP Emergency Plan Table 1.1	N/A	T2/L14 T5/L6 T5/L9 T5/L13 T5/L20 T5/L21	No	No
15	Mechanic	CPNPP Emergency Plan Table 1.1	N/A	T2/L15	No	No
16	Electrician	CPNPP Emergency Plan Table 1.1	N/A	T2/L16	No	No
17	I&C Technician #1	CPNPP Emergency Plan Table 1.1	N/A	T2/L17	No	No

**Attachment 1  
 Staffing Assessment Tables (cont.)**

**TABLE 2 – Plant Operations & Safe Shutdown  
 Two Units - Two Control Rooms**

**Minimum Operations Crew Necessary to Implement  
 ABNs and EOPs, or SAMGs if applicable**

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1	Shift Manager	Shift Manager	Operations Training
2	Unit Supervisor	Unit Supervisor	Operations Training
3	Shift Technical Advisor	STA	Operations Training
4	Reactor Operator #1	Control Operator	Operations Training
5	Reactor Operator #2	Control Operator	Operations Training
6	Station Operator #1	NEO	Operations Training
7	Station Operator #2	NEO	Operations Training
8	Station Operator #3	NEO	Operations Training
9	Station Operator #4	NEO	Operations Training

**Other (non-Operations) Personnel Necessary to Implement  
 ABNs and EOPs, or SAMGs if applicable**

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
10	Chem Technician #1	Chem #1	Craft Training
11	Chem Technician #2	Chem #2	Craft Training
12	RP Technician #1	RP #1	Craft Training
13	RP Technician #2	RP #2	Craft Training
14	Communicator	I&C #2	Craft Training
15	Mechanic	MM	EP Training
16	Electrician	EM	Craft Training
17	I&C Technician	I&C #1	Craft Training

**TABLE 3 – Firefighting**

Line	Performed By	Task Analysis Controlling Method
	N/A	

**Not applicable. A fire does not occur in this event.**



**Attachment 1  
Staffing Assessment Tables (cont.)**

**TABLE 5 – Emergency Plan Implementation**

<b>Unit 1 &amp; Unit 2 Emergency Plan Implementation (Site Area Emergency)</b>						
<b>Procedure</b>	<b>Step No.</b>	<b>Activity</b>	<b>Event Time</b>	<b>Duration</b>	<b>Performed by</b>	<b>Remarks</b>
EPP-201	4.3.6	Declare Emergency Classification Level	0	15	Shift Manager	
EPP-304	4.1.2	Approve offsite PARs	N/A	N/A	N/A	
EPP-203	4.1.2	Approve content of state/local notifications	15	30	Shift Manager	
		Approve extension of allowable dose limits	NA	NA	Shift Manager	
EPP-203	4.1.3	Notification and direction to On-Shift Staff (e.g., to assemble, evacuate, etc.)	15	30	Shift Manager	
EPP-203	4.1.3	ERO notification	15	30	CR Communicator	
		Abbreviated NRC notification of DBT event	NA	NA	NA	N/A – from assumptions, no hostile actions during this scenario
EPP-203	4.1.2	Complete state/local notification form	15	30	Shift Manager	
EPP-203	4.1.2	Perform state/local notifications	15	30	CR Communicator	
EPP-203	4.1.4	Complete NRC event notification form	30	60	Shift Manager	
		Activate ERDS	NA	NA	N/ A	Activated by TSC staff, Augmented staff task
EPP-303	4.1.4	Offsite radiological assessment	N/A	N/A	N/A	
EPP-203	4.1.4	Perform NRC notifications	30	60	CR Communicator	
EPP-203	4.1.6	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	NA	NA	N/ A	Activated by TSC staff, Augmented staff task
EPP-314	4.1.2	Personnel accountability	15	30	Security	

**Attachment 1  
Staffing Assessment Tables (cont.)**

**TABLE 5 – Emergency Plan Implementation (cont.)**

<b>Unit 1 &amp; Unit 2 Emergency Plan Implementation (General Emergency)</b>						
EPP-201	4.4	Upgrade Emergency Classification Level to GE	60	1	Shift Manager	Performed when crew is able to determine restoration of at least one safeguard bus within 4 hours is not likely
EPP-304	4.1.2	Approve offsite PARs	61	5	Shift Manager	
EPP-203	4.1.2	Approve content of state & local government notifications	66	5	Shift Manager	
EPP-203	4.1.3	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	71	1	Shift Manager	
EPP-203	4.1.2	Perform state & local government notifications	71	5	CR Communicator	
EPP-203	4.1.4	Perform NRC notifications	76	Continuous	CR Communicator	